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## **STATE OF IDAHO**

### **EMS PHYSICIAN COMMISSION**

## **STATEWIDE PROTOCOLS & PROCEDURES\***

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Corresponding to Idaho EMS Scope of Practice 2014-1

\* Including EMSPC required Protocols and Procedures

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Published September 1, 2014

2014 Revisions Include;

- Revised index to group and re-order the protocols by category.
- Updated numerous drug dosages for consistency.
- Updated the airway sequence for uniformity and consistency.
- Updated Cardiac protocols for consistency.
- Updated Pain Management flow and drug dosages.
- Updated Extremity Trauma to include patella reduction.
- Updated Spinal Immobilization Clearance to reflect minimal use of backboards.
- Added a "Lights and Siren" use protocol.
- Added Safe Haven, RSI, CPAP, Chest Decompression, Tube Verification, 12 Lead, Nebulizer, and Foreign Body procedures.

Adopted by \_\_\_\_\_ (Agency Name)

Medical Director Name \_\_\_\_\_

Medical Director Signature \_\_\_\_\_ Date \_\_\_\_\_



# Introduction

## ACKNOWLEDGMENTS

The Idaho Emergency Medical Services Physician Commission (EMSPC) is dedicated to serving the EMS system and providers throughout Idaho with EMS specific medical expertise and through open communication. The EMSPC continues to add resources for improved patient care with the development of the “**Statewide Protocols**”. The protocols were developed with the expertise of the physicians assigned to the protocol subcommittee of the EMSPC, adhoc subcommittee members with extensive clinical and field experience, and the support of the Idaho Bureau of EMS & Preparedness. The protocol subcommittee utilized professionally recognized resources for content while focusing on the skills and interventions available to Idaho licensed providers according to the most current (2014-1) scope of practice adopted by the EMSPC. The treatments outlined in these protocols were developed from the latest evidence-guided recommendations from EMS and medical organizations which include the National Association of EMS Physicians (NAEMSP), American Heart Association (AHA), American Stroke Association (ASA), American College of Cardiology (ACC), and the American College of Surgeons Committee on Trauma (ACS-COT). A special thanks for the countless hours, expertise, and commitment to quality the following individuals contributed to the project:

**David Kim, M.D.** Initial Subcommittee Chair and project lead.

**Curtis Sandy, M.D.** Current Subcommittee Chair and project lead.

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**Sara Curtin, M.D.**

**Dave Reynolds, Paramedic**

**Tom McLean, Paramedic**

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## INTRODUCTION TO STATEWIDE TREATMENT PROTOCOLS

The EMSPC is pleased to provide these protocols for use by EMS providers of Idaho. The protocols may be adopted by the EMS agency medical director for use within their agency or system. Specific protocols that are identified in the EMSPC standards manual as required to be used for specific interventions are identified and included in this publication. The protocols represent an acceptable standard of care for managing patient injuries or illness in a manner consistent with the scope of practice established by the EMSPC. The protocols work collectively to guide treatment decisions for rapid interventions to ultimately deliver the patient to the receiving hospitals in an improved clinical state whenever possible. Each protocol has an entry or starting point which is followed by defined steps to guide decision making. The protocols are a guide to assist the sound clinical judgment of the provider. The EMSPC has taken extreme caution to ensure all information is accurate and in accordance with professional standards in effect at the time of publication. Since written protocols cannot feasibly address all patient care situations that may develop, the EMSPC expects EMS providers to use their training and judgment regarding any protocol-driven care and consider that some interventions could be harmful to a patient. When the EMS provider believes that following a protocol is not in the best interest of the patient or themselves, the provider should contact an online medical control physician if possible. Cases where deviation from protocols are justified are rare. The reasons for any deviation should be documented and reviewed by the agency medical director. Changes to the protocols can be requested by agency medical directors by submitting a written description of the change directly to the EMSPC by email at [EMSPPhysicianComm@dhw.idaho.gov](mailto:EMSPPhysicianComm@dhw.idaho.gov). EMS providers are also encouraged to provide feedback and recommendations to the EMSPC at any time. The EMSPC will review the protocols on a regular basis to incorporate changes as the scope of practice or clinical interventions continue to evolve in EMS. The most current version of the protocols will be maintained on the EMSPC web site through the Bureau web site at [www.IdahoEMS.org](http://www.IdahoEMS.org). EMS providers are responsible for knowing the interventions allowed within their scope of practice and which their medical director are credentialed to provide by their medical director. Providers should be familiar with the use of these protocols as adopted by their agency medical director.

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# Idaho EMSPC Protocol Legend

These flow chart style protocols utilize standardized symbols, letters, colors, shapes, and formatting to provide the reader with a significant amount of information. The following definitions are to be applied to the protocol content for consistency and accuracy of interpretation.

## Symbol Definitions

- The stethoscope requires an assessment which can be focused or general in nature.
- The question mark identifies a targeted assessment finding.
- The pill symbolizes a medication intervention.
- The stacked blocks indicate a procedural intervention.
- An arrow points to the next step in a sequence.
- An arrow with a qualifier such as "Yes", "No", ">60", or other qualifiers points to a conditional step if the condition is present.
- The square grid identifies a box as a protocol.
- The exclamation mark identifies a protocol or procedure that is required to be followed for SOP interventions designated with a **"Requires EMSPC Protocol - 4"** in the EMSPC standards manual.

## Color and Shape Definitions

- The square green side bar with an "R" indicates the intervention is within the floor scope of practice (SOP) of an Idaho Emergency Medical Responder (EMR) – 2011.
- The round green shape with an "R" indicates the intervention is an optional module (OM) available to an EMR – 2011 which has additional requirements for use.
- The square blue shape with an "E" indicates an intervention is within the floor SOP for an Idaho Emergency Medical Technician (EMT) – 2011.
- The round blue shape indicates the intervention is an OM available to an EMT – 2011 which has additional requirements for use. This is also a floor SOP for Advanced EMT-85 who has also transitioned to EMT – 2011.
- The yellow side bar with the "A" indicates the intervention is within the floor scope of practice of an Idaho Advanced EMT – 2011.
- The round yellow shape with an "A" indicates the intervention is an OM available to an Advanced EMT – 2011.
- The gold side bar with a "P" indicates the intervention is within the floor SOP of an Idaho Paramedic – 2011.
- The dark blue round shape with a "P" indicates that the intervention is an optional module available to a Paramedic – 2011.
- The grey side bar with a white circle indicates the intervention is an OM for all levels of Idaho personnel.
- The red side bar with an "M" indicates an intervention requires contacting medical control.

## Formatting Definition Samples

### Universal Patient Care; Protocol G-1

Supplemental Oxygen

Blood Glucose

>250

### Vascular Access; Protocol Ci-4

Normal Saline or Lactated Ringers 1L IV bolus (20mL/kg IV bolus)

Complete all steps in the protocol identified

Go to next step

Provide O2 which is in the EMR SOP

AEMT or EMT credentialed for OM, assesses BGL following defined procedure.

If BGL is >250 go to next step

AEMT or EMT if credentialed for OM, obtains vascular access and administers NS as indicated

When dose is weight based it applies to adults and pediatrics

Peds dose in brackets ( ) on non-peds protocol












































































Directs the provider to choose an advanced airway by license level

Consider		
	Blind Insertion of an Airway Device (BIAD)	
	Orotracheal Intubation	
	Nasotracheal Intubation	

Choose one when the side bar spans the interventions

Consider Procedural Sedation		
	Etomidate 0.1mg/kg IV	
	Ketamine 1mg/kg IV	

# Protocol Index

General	Cardiac	Medical	Trauma
 Universal Patient Care; Protocol G-1	 Asystole/Pulseless Electrical Activity; Protocol C-1	 Abdominal Pain; Protocol M-1	 Burns, Thermal; Protocol T-1
 Air Medical; Protocol G-2	 Bradycardia, Adult; Protocol C-2	  Allergic Reaction; Protocol M-2	 Burns, Chemical & Electric; Protocol T-2
 ALS Rendezvous; Protocol G-3	 Bradycardia, Pediatric; Protocol C-3	 Altered Mental Status; Protocol M-3	 Crush Injury Syndrome; Protocol T-3
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	 Environmental Hyperthermia; Protocol E-3		
	 Hypothermia; Protocol E-4		
	 Near Drowning; Protocol E-5		
	 Toxic Inhalation; Protocol E-6		
	 Weapons of Mass Destruction: Nerve Agent; Protocol E-7		

General

Airway

Cardiac

Circulatory

Environmental

Medical



















OB/Childbirth

Trauma












# Procedures Legend

The procedures listed below have been coded to be consistent with the Idaho EMSPC SOP 2014-1 for each level of provider including "Optional Modules". It is the responsibility of each provider to know which interventions they are licensed, authorized, and credentialed to perform by their medical director. Some of the procedures referenced are included in this manual while EMS training programs and education publishers also provide comprehensive resources. The procedures with an **!** are required to be used for specific optional modules as adopted by the EMSPC .



















## Assessment Procedures

<b>R</b>	 Adult Assessment		<b>R</b>
<b>R</b>	 Pediatric Assessment		<b>R</b>
<b>R</b>	 Pain Scale		<b>R</b>
<b>E</b>	 Pulse Oximetry		<b>E</b>
<b>R</b>	 Temperature		<b>R</b>
<b>R</b>	 Cincinnati Stroke Screen		<b>R</b>
<b>A</b>	 Blood Glucose		<b>E</b> <b>!</b>
<b>A</b>	 Verification of Tube Placement		<b>E</b>
<b>A</b>	 Continuous ETCO2		<b>E</b> <b>!</b>









## Trauma Procedures

<b>R</b>	 Wound Care – General	<b>R</b>
<b>R</b>	 Hemorrhage Control	<b>R</b>
<b>E</b>	 Extremity Splinting	<b>R</b>
<b>E</b>	 Selective C-Spine	<b>R</b>
<b>E</b>	 Pelvic Immobilization Device	<b>E</b>
<b>R</b>	 Eye Irrigation	<b>R</b>
<b>R</b>	 Active External Rewarming	<b>R</b>
<b>R</b>	 Passive External Rewarming	<b>R</b>
<b>P</b>	 Morgan Lens Irrigation	<b>P</b>
<b>P</b>	 Stinger Removal	<b>P</b>
<b>P</b>	 Active Internal Rewarming	<b>P</b>




## Airway Procedures

<b>R</b>	 Foreign Body Obstruction	<b>R</b>
<b>R</b>	 Ventilation - BVM	<b>R</b>
<b>R</b>	 Oral Airway	<b>R</b>
<b>E</b>	 Nasal Airway	<b>E</b>
<b>R</b>	 Upper Airway Suction	<b>R</b>
<b>R</b>	 Cricoid Pressure	<b>R</b>
<b>A</b>	 Blind Inserted Airway Device - Adult	<b>E</b>
<b>P</b>	 Blind Inserted Airway Device - Pediatric	<b>P</b>
<b>P</b>	 Continuous Positive Airway Pressure	<b>A</b>
<b>P</b>	 Direct Laryngoscopy	<b>P</b>
<b>P</b>	 Orotracheal Intubation	<b>P</b>
<b>P</b>	 Nasotracheal Intubation	<b>P</b>
<b>P</b>	 Nasal/Oral Gastric Tube	<b>P</b>
<b>P</b>	 Tracheal suctioning	<b>P</b>
<b>P</b>	 Percutaneous Needle Cricothyrotomy	<b>P</b>
<b>P</b>	 Needle-Chest Decompression	<b>P</b>
<b>P</b>	 Intubation- Medication Assisted	<b>P</b>
<b>P</b>	 Surgical Cricothyrotomy	<b>P</b>







## Cardiac Procedures

<b>R</b>	 CPR	<b>R</b>
<b>R</b>	 Automated defibrillation	<b>R</b>
<b>P</b>	 Manual Defibrillation	<b>P</b>
<b>P</b>	 Transcutaneous Pacing	<b>P</b>
<b>P</b>	 12-Lead EKG	<b>E</b>
<b>P</b>	 Cardiac Monitor	<b>P</b>
<b>P</b>	 Vagal Maneuvers	<b>P</b>
<b>P</b>	 Therapeutic Hypothermia	<b>P</b>





## Drug Administration Procedures

<b>E</b>	 Epi Auto Injector	<b>R</b> <b>!</b>
<b>A</b>	 Sub-Q & IM Injection	<b>R</b> <b>!</b>
<b>A</b>	 Nebulized Bronchodilator	<b>E</b>

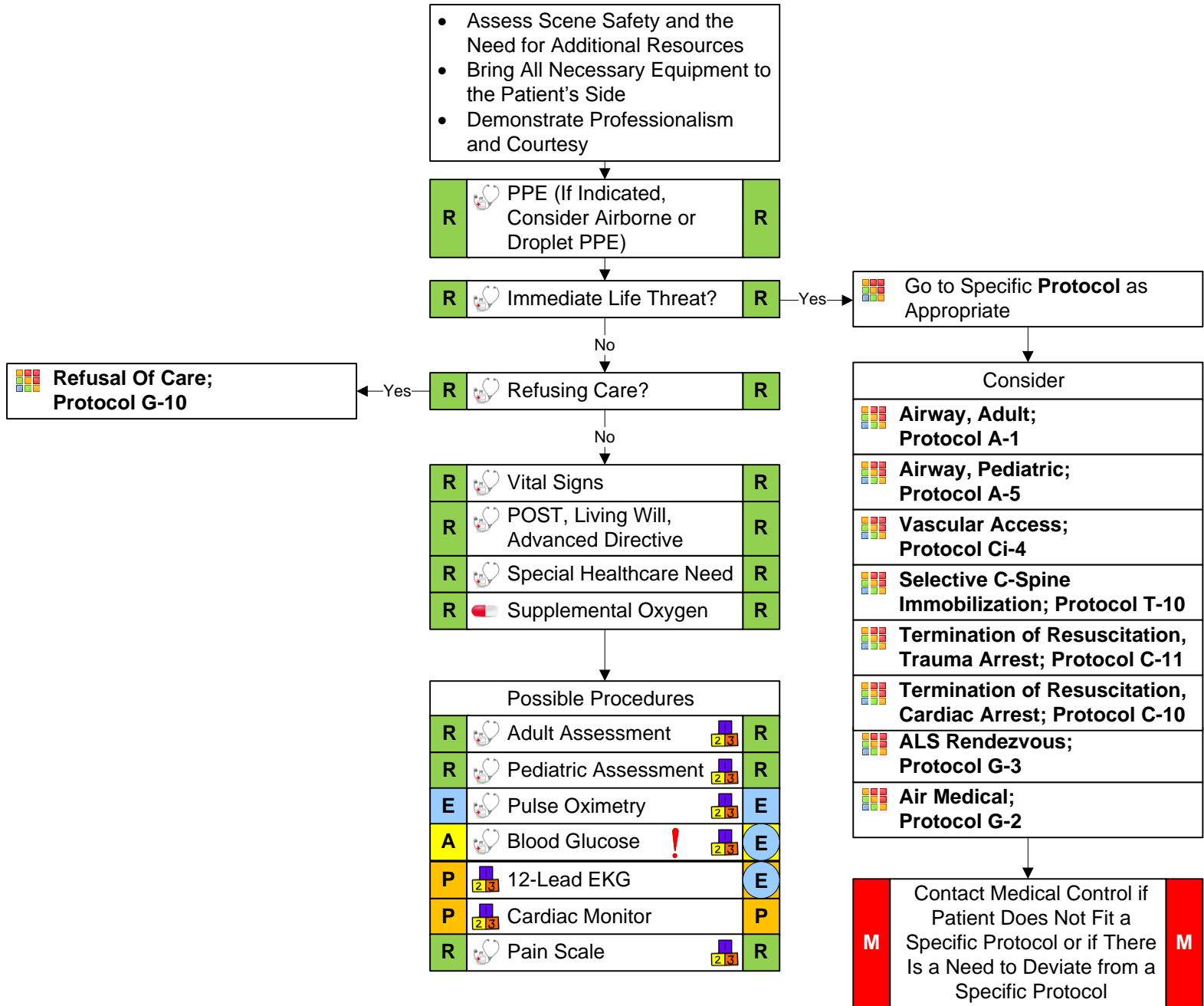
## Miscellaneous Procedures

<b>R</b>	 Childbirth - Normal	<b>R</b>
<b>E</b>	 Childbirth - Complicated	<b>E</b>
<b>R</b>	 Cooling Measures	<b>R</b>
<b>E</b>	 Physical Restraints	<b>E</b>
<b>R</b>	 Safe Haven	<b>R</b>
<b>O</b>	 Taser Barb Removal	<b>O</b>

## IV Access Procedures

<b>A</b>	 Peripheral IV	<b>E</b>
<b>A</b>	 Intraosseous Infusion, Pediatric	<b>E</b>
<b>A</b>	 Intraosseous Infusion, Adult	<b>E</b>
<b>A</b>	 External Jugular IV	<b>E</b>

# Universal Patient Care



## Pearls

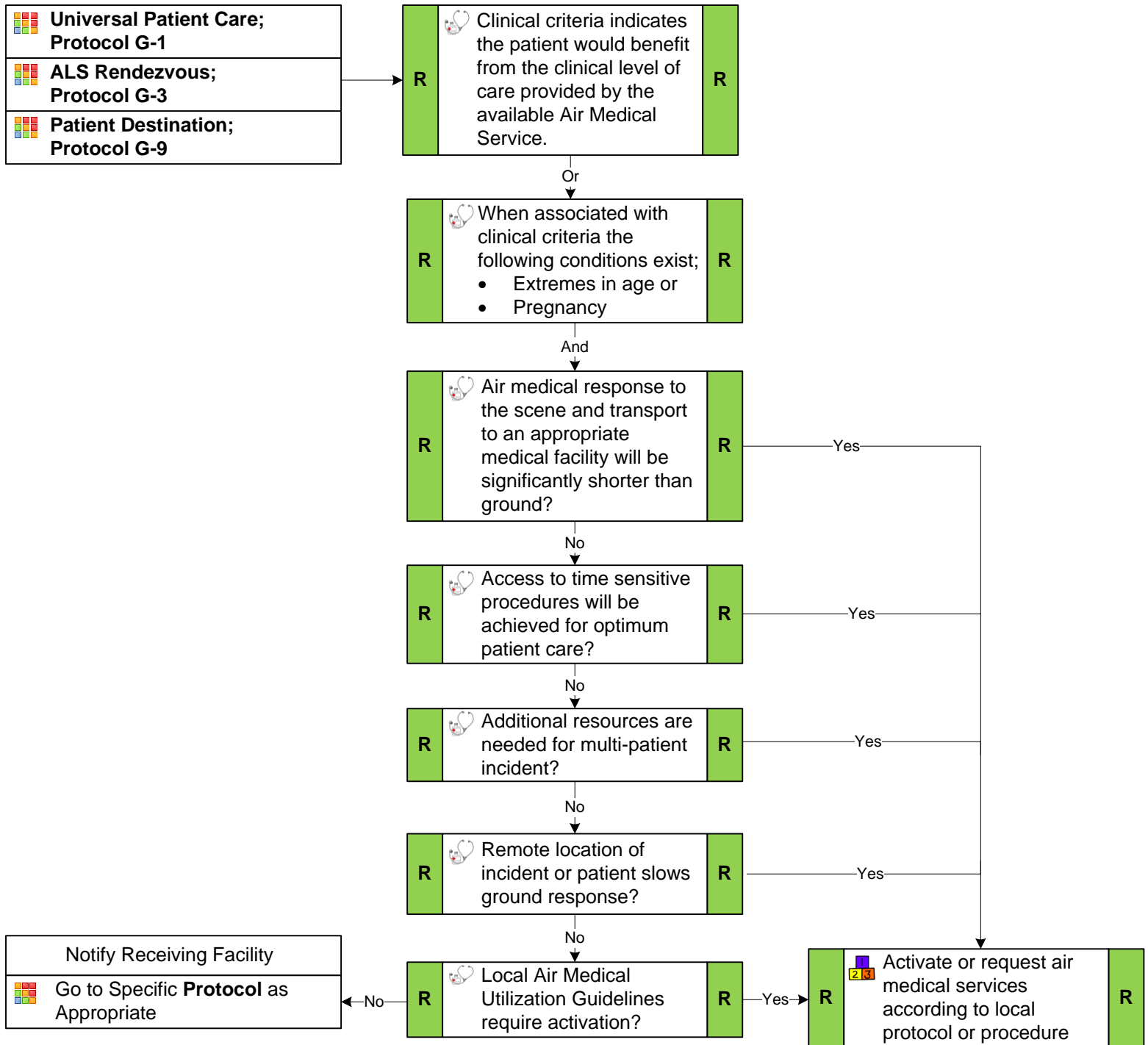
- All patient contacts require completion of a patient care report (PCR); including refusals of care, treat-and-releases, and other scenarios that result in non-transport by EMS.
- Pulse oximetry and temperature documentation is dependent on the specific complaint.
- The patient is considered pediatric if they are < 12 years of age or they fit on the Broselow-Luten tape. If a patient does not fit either criteria, they are considered an adult for the purposes of these protocols.
- The timing of a transport should be based on the patient's clinical condition.
- 12-lead EKG acquisition should not delay stabilization of the ABCs or patient transport.
- Never hesitate to contact Medical Control for the patient who refuses transport.
- Ask if the patient has a Medical Emergency Health Care Information form, especially if they have special healthcare needs.
- Does the patient have a POST, Living Will, or other Advance Directive?

## Protocol G-1 – 2014 Universal Patient Care

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# Air Medical Utilization



## Pearls

- Activate air medical services as soon as possible when indicated.
- Air medical services can be activated prior to arrival at the scene when the incident or mechanism indicates patient condition will meet criteria for air medical utilization.
- EMS personnel must complete a patient assessment prior to canceling an air medical response.

## Performance Improvement Suggestions

- Review over/under triage of air medical requests
- Documentation of clinical criteria for air medical utilization

## Protocol G-2 – 2014 Air Medical Utilization

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# ALS Rendezvous



## History

- “High Risk” patients include:
  - Extremes in age
  - Significant trauma
  - Significant / complex medical issues

## Signs & Symptoms

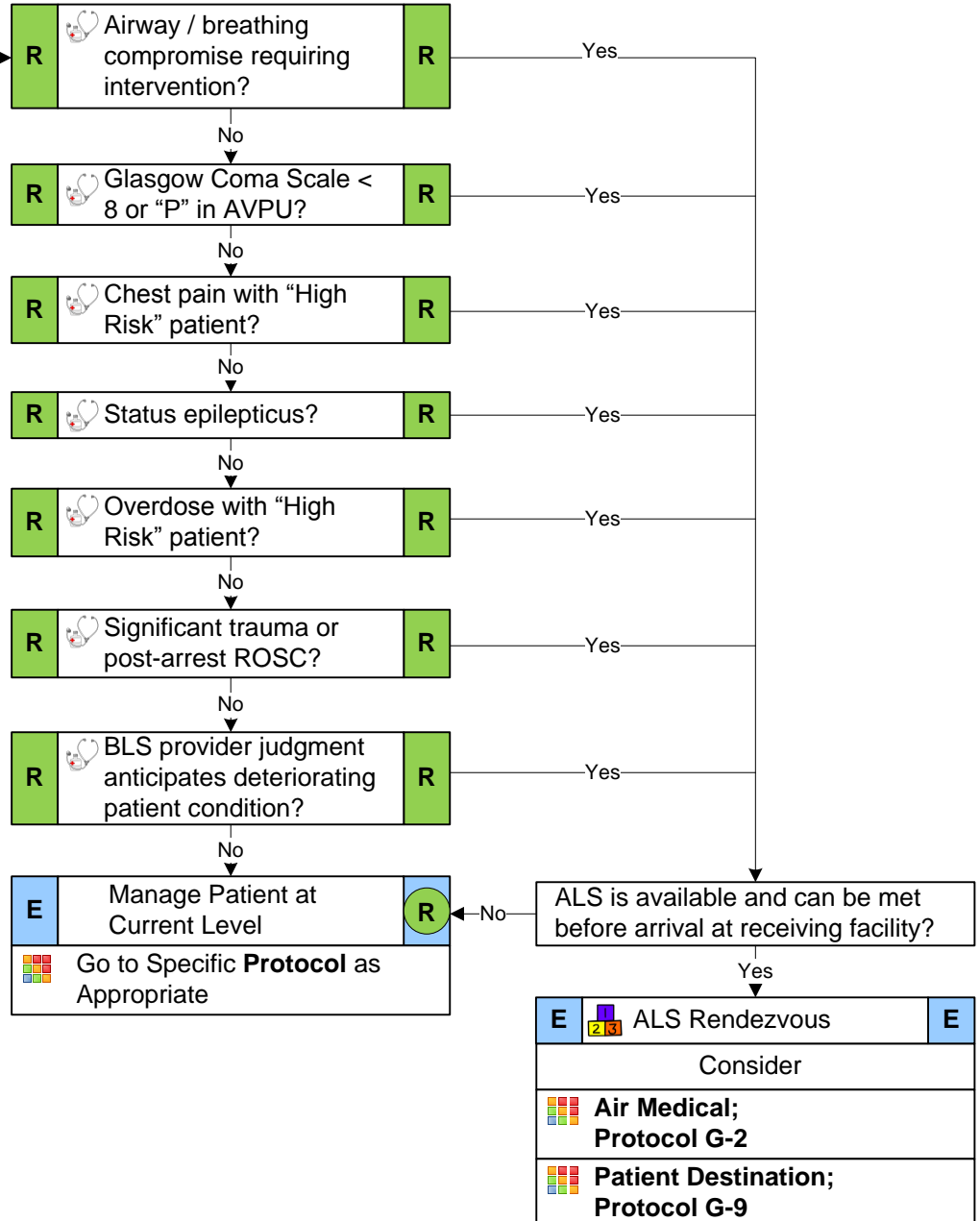
- Airway compromise
- Shock
- Chest pain (suspicious of cardiac etiology)
- Combative behavior or altered level of consciousness

## Differential

- None



**Universal Patient Care;  
Protocol G-1**



## Pearls

- DO NOT delay patient transportation on-scene; begin the transport and set up a rendezvous location while en route.
- ALS rendezvous agreements should be established and integrated with dispatch procedures.
- Consider a preemptive ALS rendezvous early in the call rather than waiting for the patient's condition to deteriorate.

## Performance Improvement Suggestions

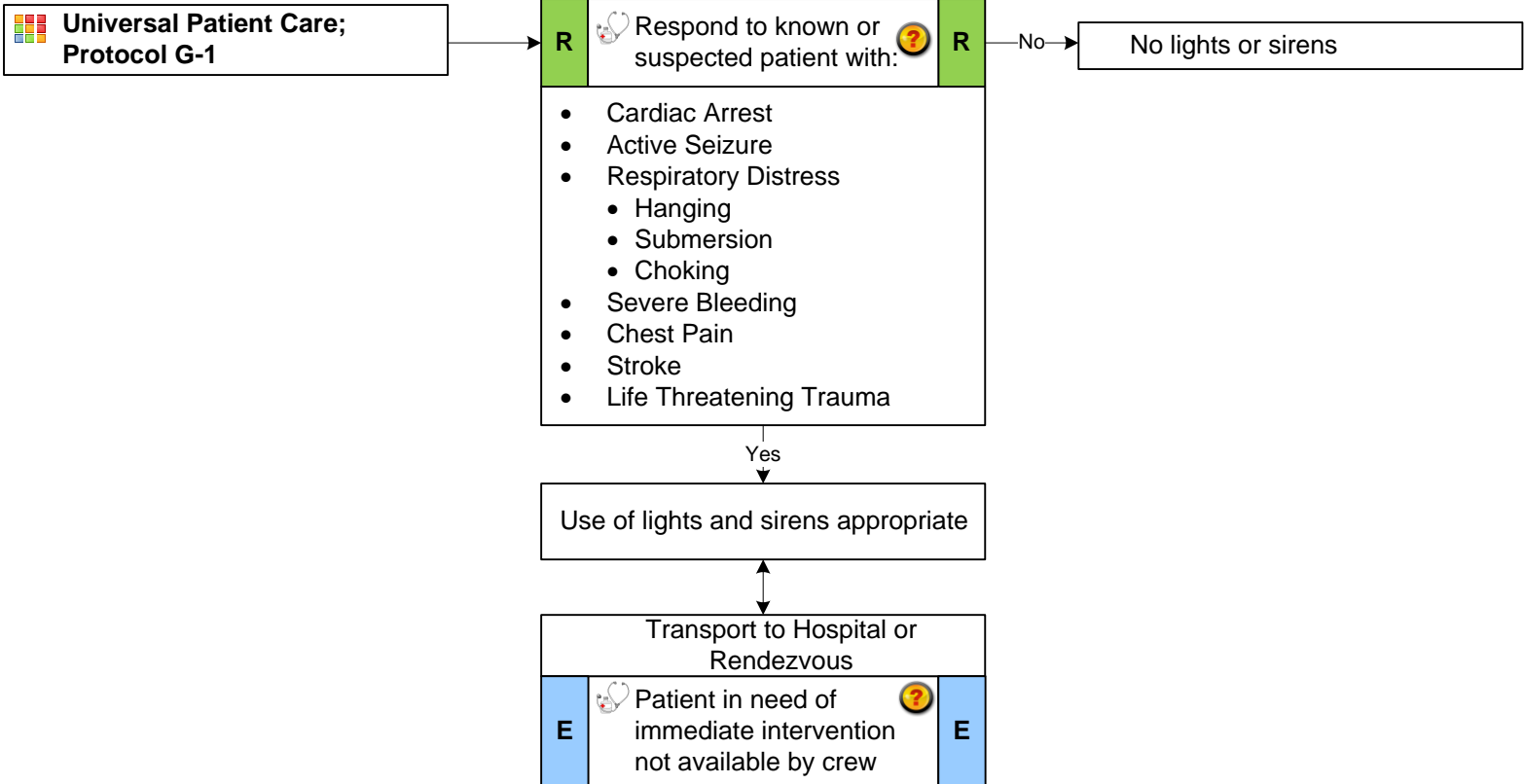
- Correct utilization of an ALS rendezvous dependent upon the patient condition
- Patient care needs correlate to dispatch protocols (run reviews)

## Protocol G-3 – 2014 ALS Rendezvous

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# Use of Lights and Sirens



## Pearls

- Use of lights and sirens creates a greater risk of motor vehicle crashes to responders and public.

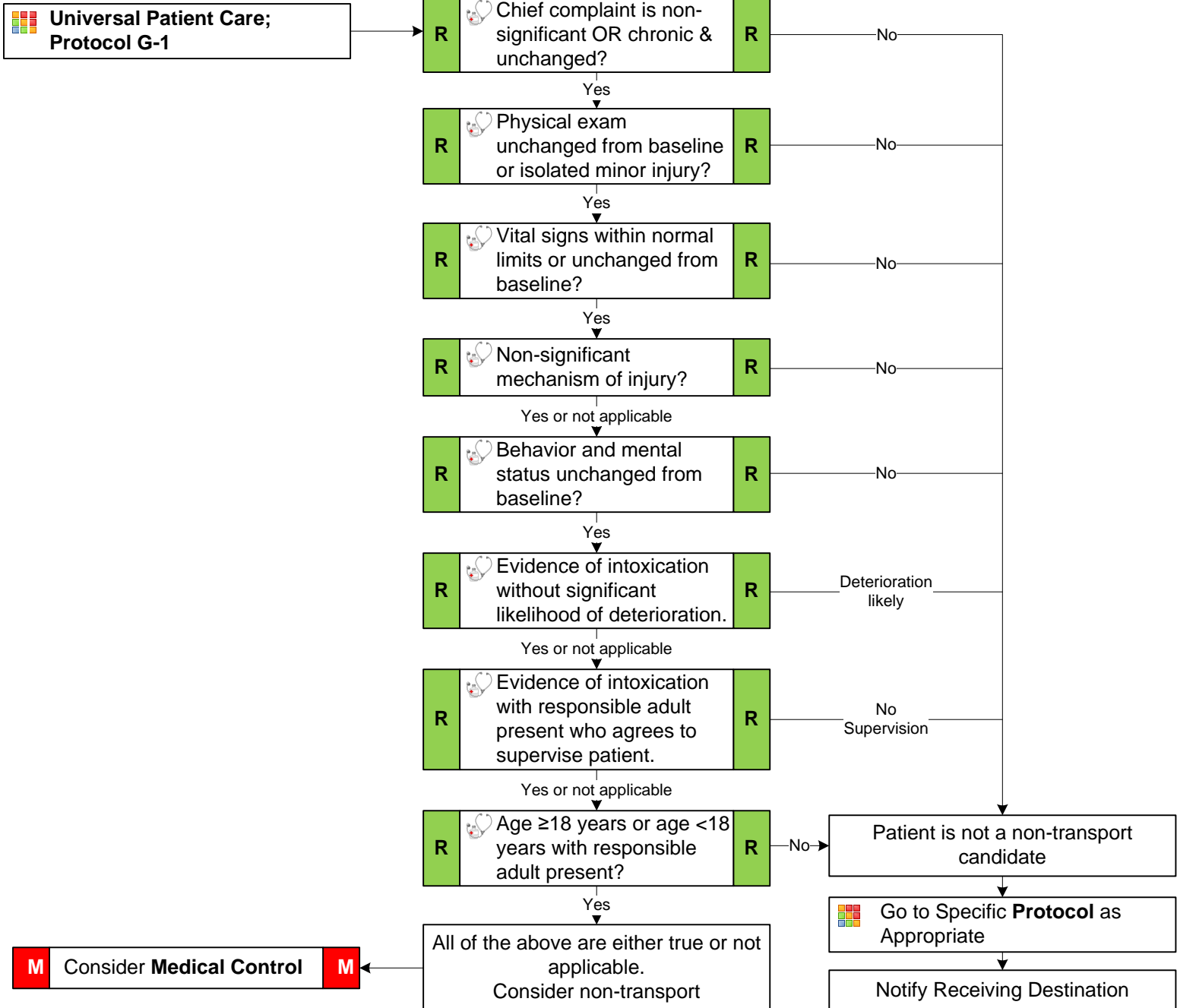
## Performance Improvement Suggestions

- Review of patient conditions for appropriate use

## Protocol G-4 – 2014 Use of Lights and Sirens

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# Non-Transport



## Pearls

- This protocol does not apply to a patient-initiated refusal of care.
- In general, a person becomes a patient when he/she or another responsible party requests an EMS response. This request implies consent for assessment and treatment. When a person is unconscious or is otherwise incapable of providing consent, EMS may initiate an assessment if a reasonable person would ordinarily consent to assessment and treatment under similar circumstances.
- At times, EMS may be dispatched to a medical or trauma scene where multiple persons are present and it's unclear for whom EMS was requested. A person who declines EMS at such a scene (e.g., "I'm okay but you should check that person over there.") is not considered a patient as long as that person is well-appearing and appears capable of medical decision-making.
- Consider medical control prior to non-transport to help reduce the likelihood of not transporting a patient with potentially serious illness or injury.
- Non-transported minors must be released to a responsible adult.

## Performance Improvement Suggestions

- Documentation of applicable non-transport criteria

## Protocol G-5 – 2014 Non-Transport

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# Pain Management, Adult



## History

- Age
- Location of pain
- Duration
- Severity (0-10)
- Past medical history
- Current medications
- Drug allergies

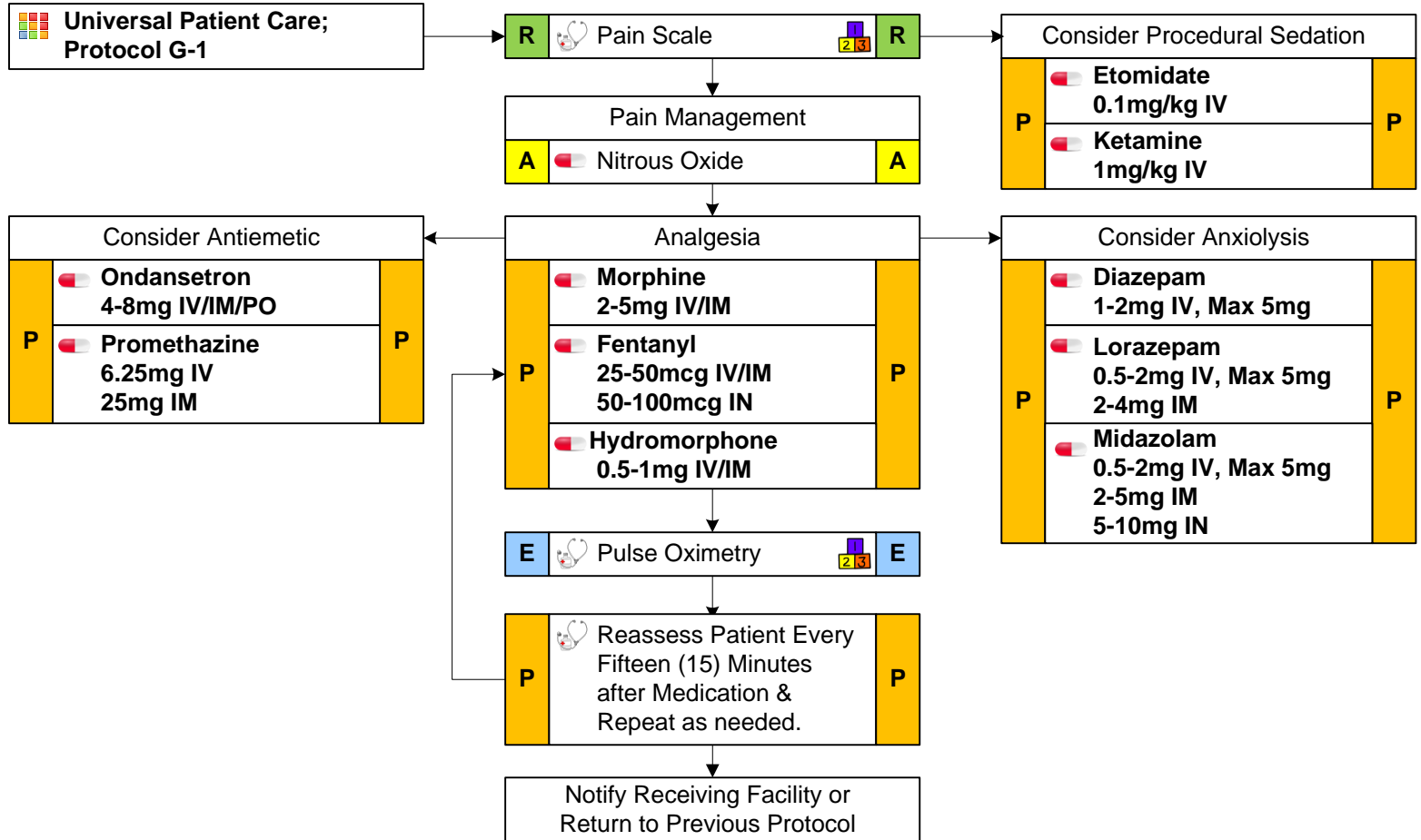
## Signs & Symptoms

- Quality (sharp, dull, etc.)
- Radiation
- Relation to movement & respiration
- Increased with palpation of area

## Differential

- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural (respiratory)
- Neurogenic
- Renal (kidneys)

## Universal Patient Care; Protocol G-1



## Pearls

- Prioritize patient care – the stabilization of ABCs is more important than pain management.
- Pain severity (on a scale of 0-10) is a vital sign to be recorded at disposition and pre- and post-medication delivery.
- Administer narcotics with caution in patients presenting with hypotension or an altered mental status.
- All patients should have drug allergies documented prior to administering pain medications.
- The onset of pain relief may be delayed after narcotic IM administration as compared to IV administration. Alternately, the duration of action of IM-administered drugs may be prolonged as compared to those administered via IV.
- The administration of a narcotic medication in combination with a benzodiazepine may result in synergistic or excessive sedation and/or respiratory depression. The narcotic should be administered first and its effects assessed prior to benzodiazepine administration.
- Limit IN medications to 1mL per nostril; if more than 2mL is required, additional medications may be given IN after 10 minutes.
- If needed, Narcan (Naloxone) should be carefully titrated to reverse respiratory depression without completely reversing analgesia.
- Ondansetron (Zofran) is the primary medication for the treatment of nausea. Promethazine (Phenergan) may result in excessive sedation and may cause soft tissue necrosis when given via IV.
- Consider procedural sedation for short-term events that may cause extreme pain (e.g. splinting, extrication, etc.).

## Performance Improvement Suggestions

- Documentation of pain severity
- Need for narcotic reversal

## Protocol G-6 – 2014 Pain Management, Adult

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# Pain Management, Pediatric



## History

- Age
- Location of pain
- Duration
- Severity (0-10)
- Past medical history
- Current medications
- Drug allergies

## Signs & Symptoms

- Quality (sharp, dull, etc.)
- Radiation
- Relation to movement & respiration
- Increased with palpation of area

## Differential

- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural (respiratory)
- Neurogenic
- Renal (kidneys)



## Universal Patient Care; Protocol G-1

**R** Pain Scale **R**

Consider Procedural Sedation

Pain Management  
**A** Nitrous Oxide **A**

**P** Ketamine  
1mg/kg IV  
4mg/kg IM **P**  
**P** Etomidate  
0.1mg/kg IV **P**

Consider Antiemetic  
**P** Ondansetron  
0.1mg/kg IV/IM/PO **P**

Analgesia  
**P** Morphine  
0.1mg/kg IV/IM **P**  
**P** Fentanyl  
1-2mcg/kg IV/IM  
2mcg/kg IN **P**  
**P** Hydromorphone  
( > 6 mos)  
0.01-0.02mg/kg IV/IM **P**

**E** Pulse Oximetry **E**

**P** Reassess Patient Every  
Fifteen (15) Minutes  
after Medication &  
Repeat as needed. **P**

Notify Receiving Facility or  
Return to Previous Protocol

## Pearls

- Prioritize patient care – the stabilization of ABCs is more important than pain management.
- The pediatric pain scale is a vital sign to be recorded pre- and post-medication delivery and at disposition.
- Administer narcotics with caution in patients presenting with hypotension or an altered mental status.
- All patients should have drug allergies documented prior to administering pain medications.
- The onset of pain relief may be delayed after narcotic IM administration as compared to IV administration. Additionally, the duration of action of IM administered drugs may be prolonged as compared to those administered via IV.
- The administration of a narcotic in combination with a benzodiazepine may result in synergistic or excessive sedation and/or respiratory depression. The narcotic should be administered first and its effects assessed prior to benzodiazepine administration.
- Limit IN medications to 1mL per nostril; if more than 2mL is required, additional medications may be given IN after 10 minutes.
- If needed, Narcan (Naloxone) should be carefully titrated to reverse respiratory depression without completely reversing analgesia.
- Ondansetron (Zofran) is the primary medication for the treatment of nausea. Promethazine (Phenergan) may result in excessive sedation and may cause soft tissue necrosis when given via IV.
- Consider procedural sedation for short-term events that may cause extreme pain (e.g. splinting, extrication, etc.).

## Performance Improvement Suggestions

- Documentation of pain severity
- Need for narcotic reversal

## Protocol G-7 – 2014 Pain Management, Pediatric

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# Police Custody



## History

- Traumatic injury
- Drug abuse
- Cardiac history
- History of asthma
- Psychiatric history

## Signs & Symptoms

- External signs of trauma
- Palpitations
- Shortness of breath
- Wheezing
- Altered mental status
- Agitation

## Differential

- Agitated delirium
- Substance abuse
- Traumatic injury
- Closed head injury
- Asthma exacerbation
- Cardiac dysrhythmia

Scene Safety!

**Universal Patient Care;  
Protocol G-1**

No

Evidence of Traumatic Injury or Medical Illness?

Yes

Use of Pepper Spray or Taser?

Pepper Spray

Taser Barb Removal

Significant Injury or Fall after Taser use?

Ischemic Chest Pain or Dysrhythmia?

Yes

Go to Specific **Protocol** as Appropriate  
Coordinate Transport with Law Enforcement

No

No

Agitated Delirium?

Yes

Consider

**Behavioral;  
Protocol M-5**

No

Discuss Patient Disposition with Law Enforcement

Consider

**Non Transport;  
Protocol G-5**

Notify Receiving Facility

Use Appropriate PPE

Eye Irrigation

**Tetracaine Ophthalmic 0.5% Drops**  
2gtts in affected eye(s)

Morgan Lens Irrigation

Dyspnea?

Yes

**Respiratory Distress, Adult;  
Protocol A-7**

**Respiratory Distress, Pediatric  
Protocol A-8**

## Pearls

- This protocol may also be used when a patient is not in police custody or when a patient is not under arrest.
- Agitated delirium is characterized by marked restlessness, irritability and/or high fever. Patients exhibiting these signs are at higher risk for sudden death and should be transported to the hospital - avoid prone positioning.
- Patients restrained by law enforcement devices may not be transported in the ambulance without a law enforcement officer in the patient compartment who is capable of removing the devices.

## Performance Improvement Suggestions

- Documentation of taser probe location
- Documentation of eye irrigation duration & volume of eye irritant

## Protocol G-8 – 2014 Police Custody

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General

# Patient Destination



**Universal Patient Care;  
Protocol G-1**

**R** Trauma Patient? **R**

Yes

**Patient Destination: Trauma  
Triage; Protocol T-9**

No

**P** STEMI? **E**

Yes

Transport to PCI-capable facility

- STEMI present on 12-lead EKG
- Transport time (air or ground) to PCI-capable facility <60 minutes

No

**E** Brain Attack? **E**

Yes

Transport to Stroke Center

- Positive Cincinnati Stroke Scale
- Time from last seen normal to arrival at stroke center <3 hours for IV TPA
- Time from last seen normal to arrival at stroke center <3-6 hours for IA TPA or mechanical thrombectomy

No

**E** Immediately Life-Threatening Condition? **E**

Yes

Transport to Closest Appropriate Facility

No

**E** Mass Casualty Incident? **E**

Yes

Transport Determined by Incident Commander or Designee

No

**E** Special Patient or System Considerations? **E**

Yes

Transport to Closest Appropriate Facility

- Pediatric Patient
- High-Risk Obstetric Patient

No

**E** Patient Preference? **E**

Yes

Transport in Accordance to Patient Preference

No

Transport to Closest Appropriate Facility

**M** Contact Medical Control when the closest appropriate facility is unclear. **M**

## Pearls

- The window for IV TPA may be extended to 4.5 hours for certain brain attack patients. Consult with your local stroke center for specific patient criteria.
- Consult with your local stroke center to determine their brain attack capabilities (e.g., IV TPA, IA TPA, mechanical thrombectomy).
- If the patient requests transport to a facility not consistent with this protocol, honor the request only after informing the patient why the EMS system recommends another facility (e.g., available medical capability or capacity, shorter transport time, "time is muscle") and after the patient verbalizes understanding (informed refusal). If the patient demonstrates impairment of judgment related to injury, shock, drug effects, or emotional instability, act in the patient's best interest and transport the patient to the most appropriate facility as determined by this protocol.
- EMS may decline transport to the patient's preferred facility when transport time or distance will adversely effect local EMS resource availability. Additional EMS system or geopolitical considerations (e.g., county boundaries) may also preclude transport to the patient's preferred facility.

## Performance Improvement Suggestions

- Documentation of criteria used to determine patient destination
- Documentation of informed refusal, if applicable
- For STEMI and brain attacks, EMS transport time to receiving facility and door-to-reperfusion time at receiving facility

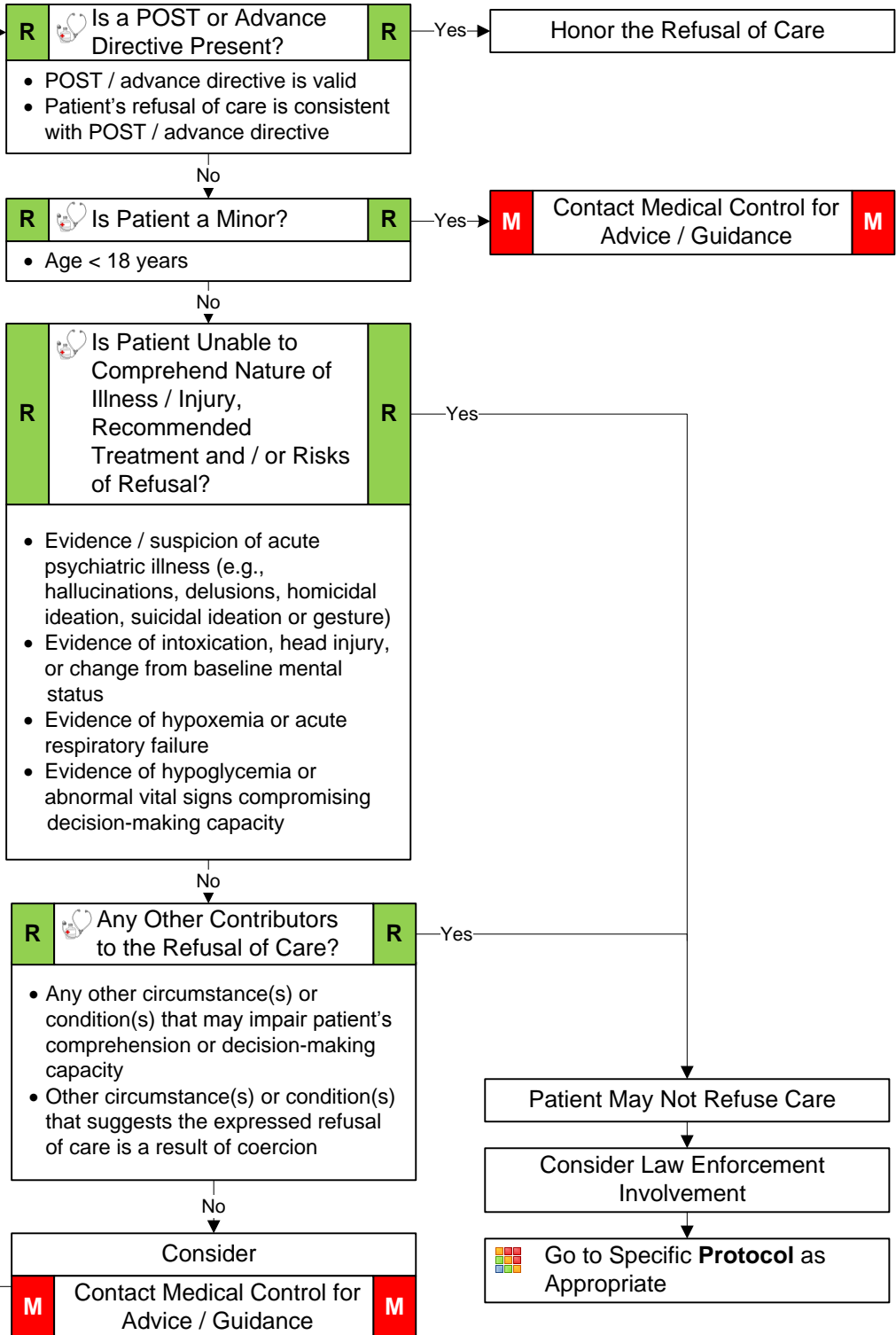
## Protocol G-9 – 2014 Patient Destination

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# Refusal of Care



## Universal Patient Care; Protocol G-1



### Pearls

- A patient who refuses care must be able to receive information, process the received information, and demonstrate understanding of the information as well as the consequences of refusing care.
- A patient's denial of illness, financial constraints, and/or fear of hospitalization may contribute to a refusal of care.
- Enlist family, coworkers, friends, and/or medical control to help convince patients to receive appropriate care and transport.
- Voluntary consent to treatment is greatly preferred over conflict, law enforcement involvement, or physical restraint.

### Performance Improvement Suggestions

- Documentation that patient understands risk of refusing care
- Documentation of law enforcement's participation, if applicable

## Protocol G-10 – 2014 Refusal of Care

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# Therapeutic Hypothermia



## History

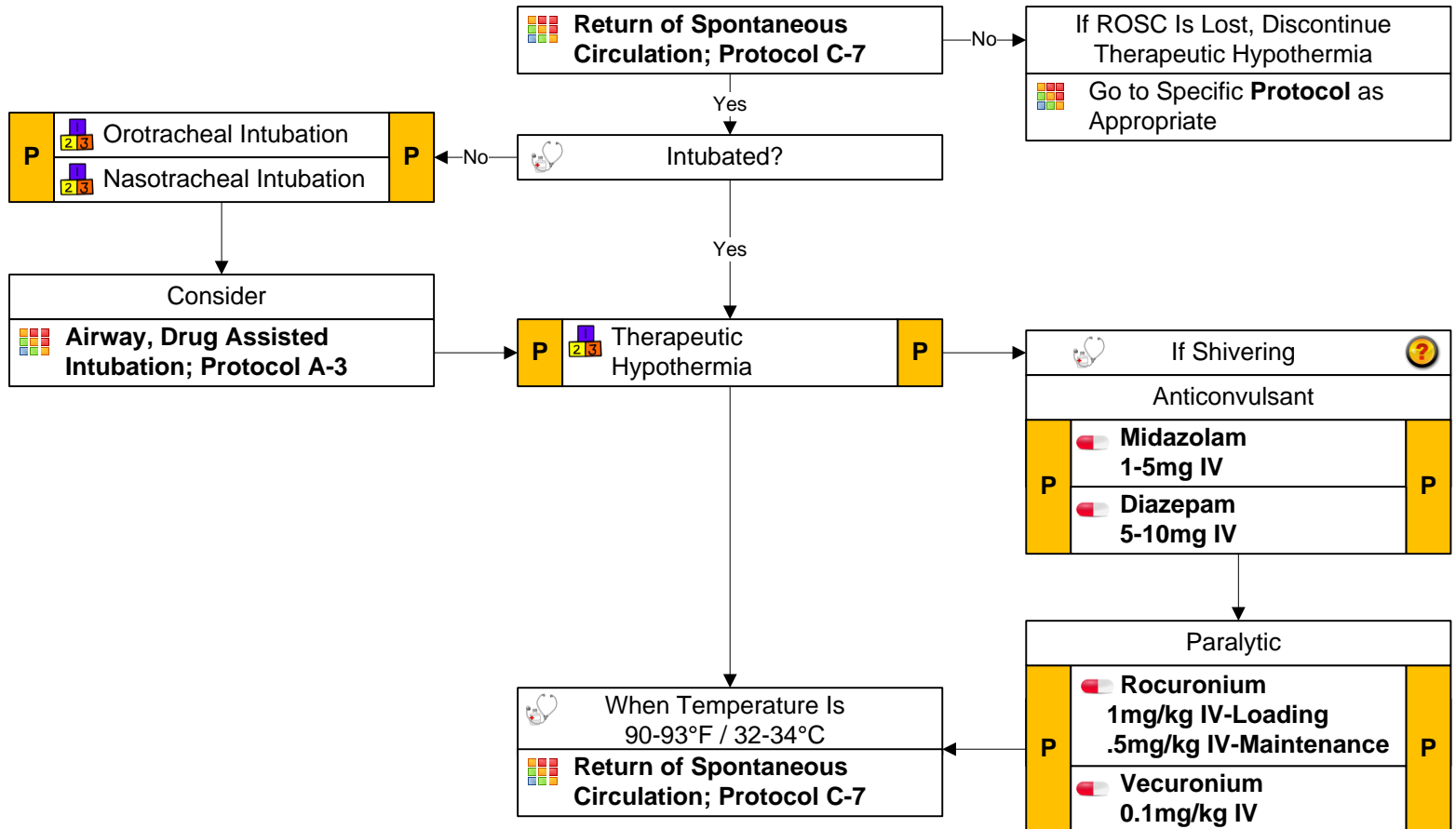
- Non-traumatic cardiac arrest with return of spontaneous circulation
- Adult > 16 years of age
- Initial temperature > 93°F / 33.9°C

## Signs & Symptoms

- Glasgow Coma Scale < 8
- No purposeful response to pain

## Differential

- Continue to address specific differentials associated with the original dysrhythmia



## Pearls

- Overcooling is common and should be avoided.
- Avoid hyperventilation; keep the EtCO<sub>2</sub> at 40.
- Do not delay transport for cooling.

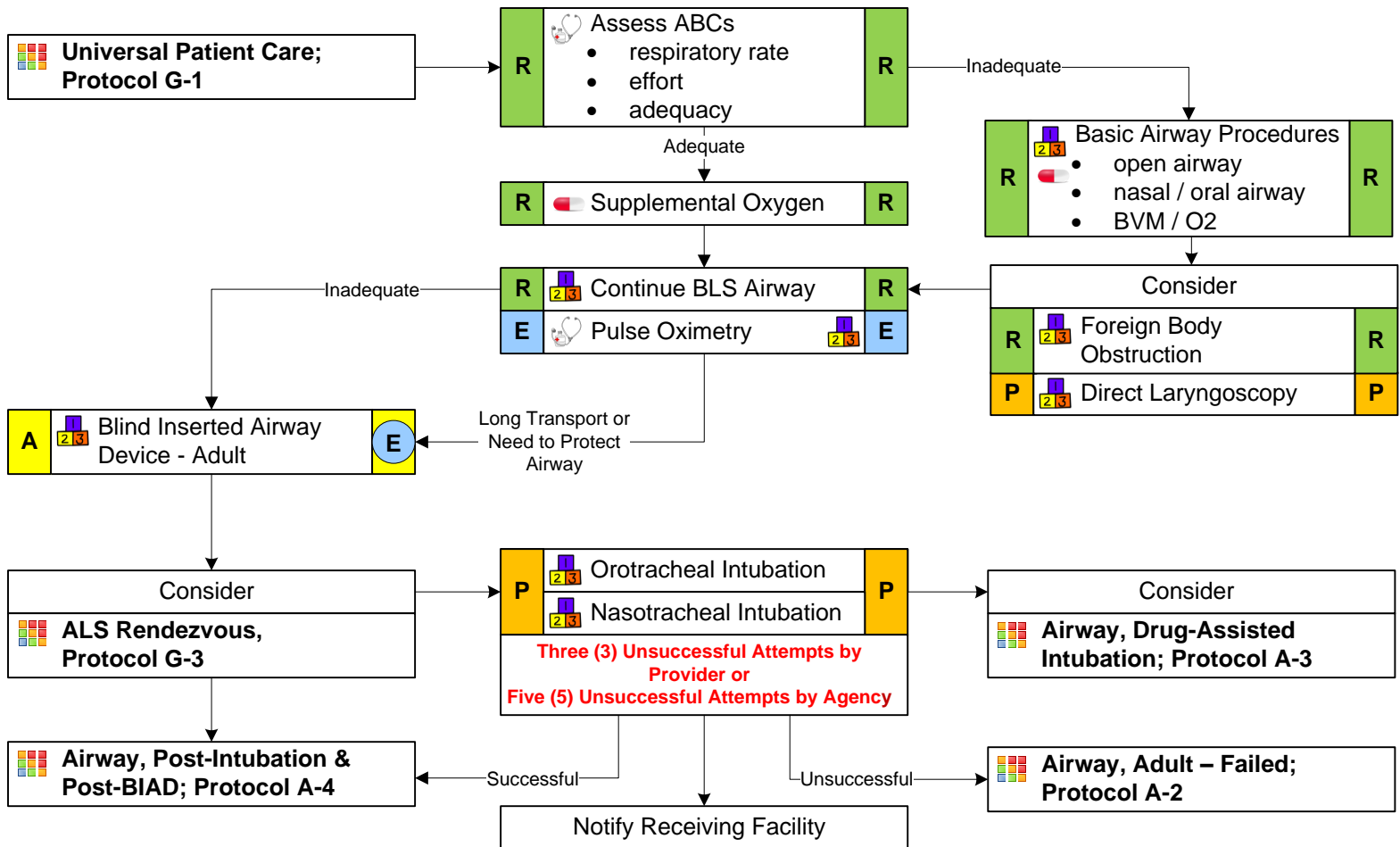
## Performance Improvement Suggestions

- Documentation of temperature on arrival

## Protocol G-11 – 2014 Therapeutic Hypothermia

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# Airway, Adult



## Pearls

- For the purposes of this protocol, a secure airway is when the patient is receiving appropriate oxygenation and ventilation.
- Do not assume hyperventilation is psychogenic – use oxygen, not a paper bag.
- If an effective airway is being maintained by BVM with continuous pulse oximetry values of  $\geq 90$ , it is acceptable to continue with basic airway measures instead of using a BIAD or intubation.
- An 'intubation attempt' is defined as insertion of the laryngoscope blade into the mouth or insertion of the endotracheal tube through the nares.
- Paramedics should consider using a BIAD rather than intubation if a difficult airway is anticipated.
- Paramedics should consider drug-assisted intubation in patients that are awake as well as patients who, despite sedation, are persistently combative.
- Ear-to-sternal notch patient positioning will improve your laryngoscopic view; however, maintain C-spine immobilization for patients with a suspected spinal injury.
- Sellick's maneuver, BURP maneuver (Back [posterior], Up, and to pt's Right Pressure), and/or external laryngeal manipulation should be used to assist with difficult intubations.
- Although EtCO<sub>2</sub> detection is the preferred method to confirm ETT and BIAD placement, multiple methods must be used such as an esophageal tube detector device, auscultation of breath sounds, absence of epigastric sounds, ETT misting, chest rise, and patient response (e.g., pulse oximetry, skin color, heart rate).
- If first intubation attempt fails, make an adjustment and try again:
  - Use a different laryngoscope blade size/type or a different ETT size
  - Apply external laryngeal manipulation: e.g. BURP maneuver
  - Change head positioning to achieve ear-to-sternal notch patient positioning (unless c-spine immobilization indicated)
  - Change cricoid pressure
  - Gum Elastic Bougie
- It is important to secure the ETT and BIAD well; consider a C-collar to better maintain placement.
- If breath sounds are decreased on the left side after intubation, check your ETT depth & consider right mainstem intubation.

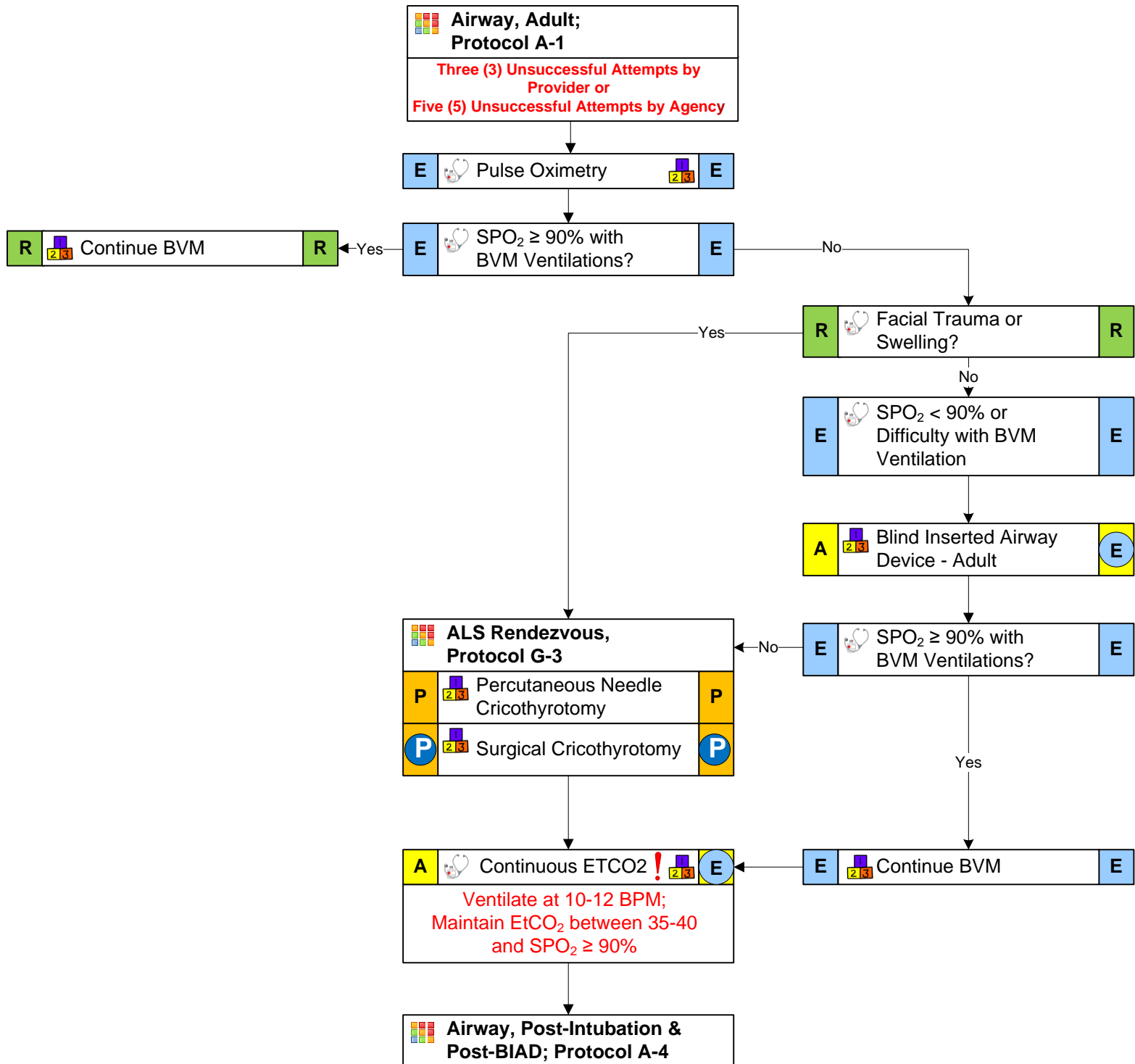
## Performance Improvement Suggestions

- Documentation of ventilatory rate
- Documentation of pulse oximetry

## Protocol A-1 – 2014 Airway, Adult

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# Airway, Adult – Failed



## Pearls

- Continuous EtCO<sub>2</sub> monitoring should be initiated in all patients with an ETT or BIAD.
- Notify receiving facility AS EARLY AS POSSIBLE when you encounter a difficult or failed airway.

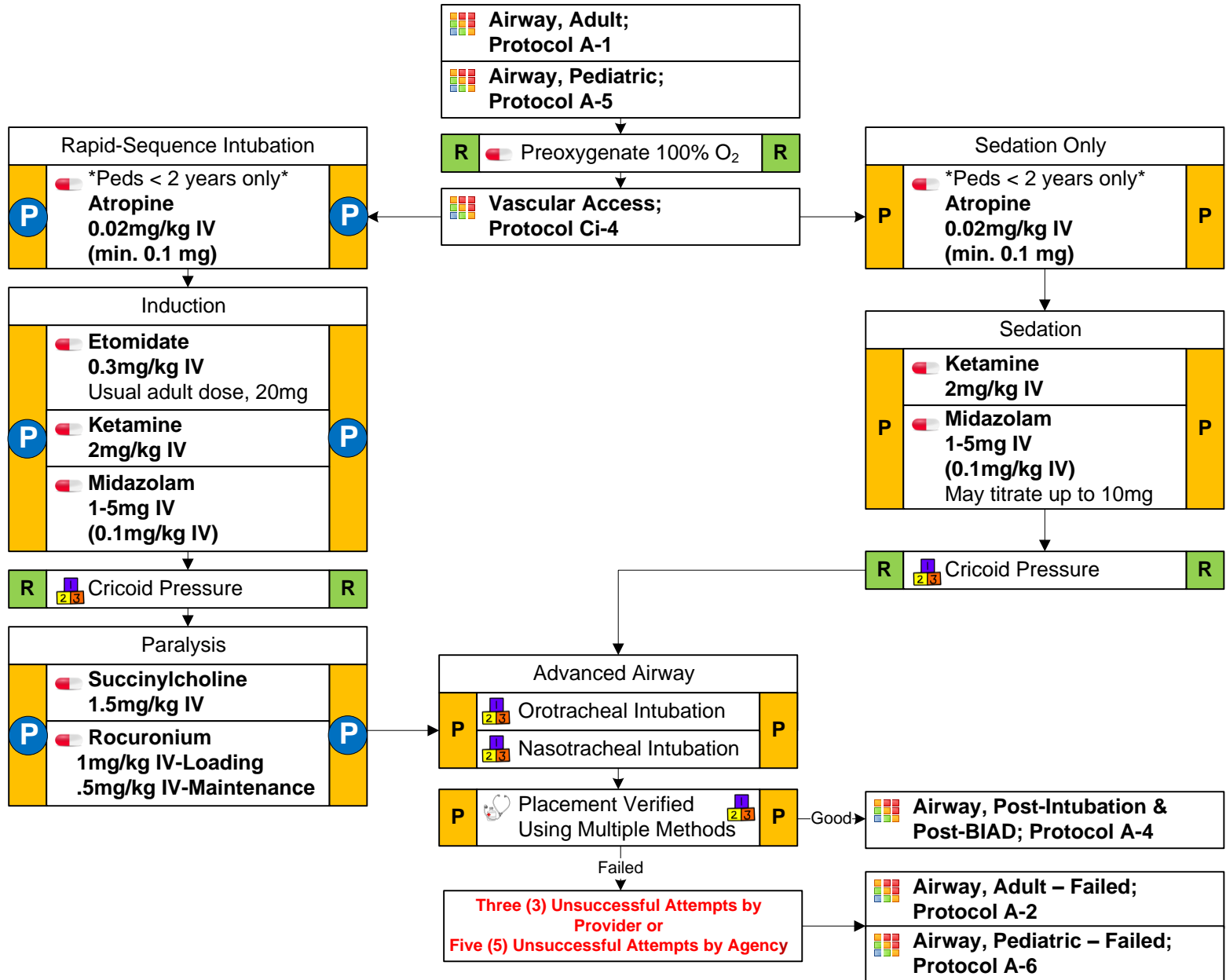
## Performance Improvement Suggestions

- Number of intubation attempts prior to BIAD or cricothyrotomy
- Cricothyrotomy success rate
- Incidence of inappropriate hyperventilation
- Documentation of pulse oximetry

## Protocol A-2 – 2014 Airway, Adult - Failed

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# Airway, Drug Assisted Intubation



## Pearls

- Once a patient has been given a paralytic drug, **YOU ARE RESPONSIBLE FOR VENTILATIONS!**
- All equipment, including suction, must be in place and ready for use prior to administering any drugs.
- Prepare rescue airway device when you anticipate a difficult airway.
- Each patient may only receive one dose of succinylcholine. Rocuronium may be repeated.
- Although EtCO<sub>2</sub> detection is the preferred method to confirm ETT and BIAD placement, multiple methods must be used such as an esophageal tube detector device, auscultation of breath sounds, absence of epigastric sounds, ETT misting, chest rise, and patient response (e.g., pulse oximetry, skin color, heart rate).
- If 1st intubation attempt fails, make an adjustment and try again:
  - Use a different laryngoscope blade size/type or a different ETT size
  - Apply external laryngeal manipulation: e.g. BURP maneuver
  - Change head positioning to achieve ear-to-sternal notch patient positioning (unless C-spine immobilization indicated).
  - Change cricoid pressure
  - Gum elastic bougie
- If breath sounds are decreased on the left side after intubation, check your ETT depth & consider right mainstem intubation.

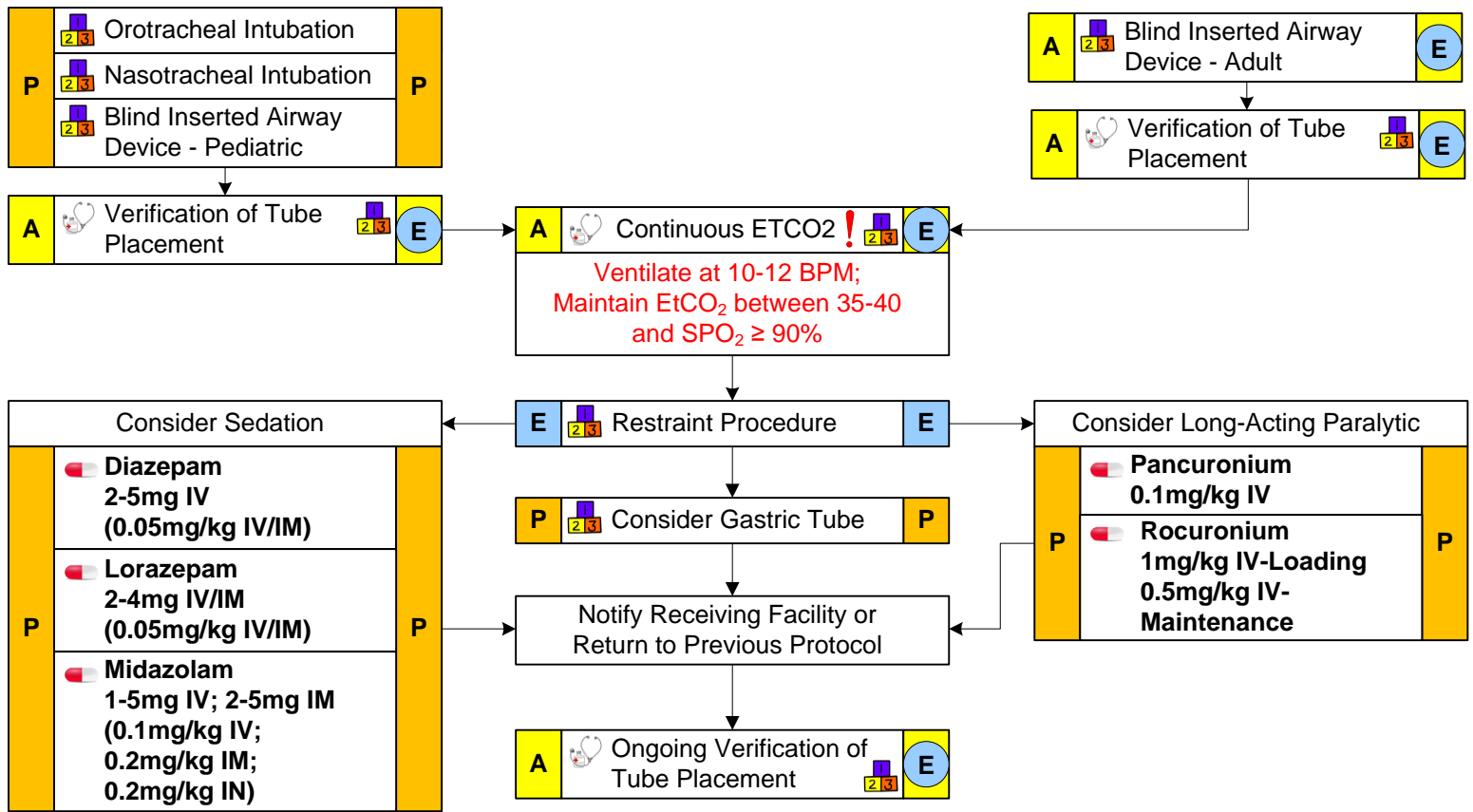
## Performance Improvement Suggestions

- Number of Provider/EMS Agency attempts prior to Airway, Adult – Failed; Protocol A-2 -OR- Airway, Pediatric – Failed; Protocol A-6
- Placement verified with EtCO<sub>2</sub> detection & multiple methods

## Protocol A-3 – 2014 Airway, Drug Assisted Intubation

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# Airway, Post-Intubation & Post-BIAD



## Pearls

- Although EtCO<sub>2</sub> detection is the preferred method to confirm ETT and BIAD placement, multiple methods must be used such as an esophageal tube detector device, auscultation of breath sounds, absence of epigastric sounds, ETT misting, chest rise, and patient response (e.g., pulse oximetry, skin color, heart rate).
- Continuous EtCO<sub>2</sub> capnography and pulse oximetry are strongly recommended for the monitoring of all patients with a BIAD or ETT.
- Initial ventilatory rates should be 10-12/minute to maintain an EtCO<sub>2</sub> of 35-40. (Peds: 30/minute, age < 1 yr; 25/minute, 1-5 yrs; 20/minute, 6-12 yrs). Avoid hyperventilation except in cases of impending herniation - in cases of impending herniation, maintain an EtCO<sub>2</sub> between 25-30. (Peds: 35/minute, age < 1 yr; 30/minute 1-5 yrs; 25/minute 6-12 yrs.)
- An orogastric or nasogastric tube will reduce the risk of aspiration and may improve oxygenation and ventilation. Gastric tube placement should be considered in all intubated and BIAD patients, if available.
- Long-acting paralytics may be needed post-intubation and post-BIAD insertion to protect the patient from self-extubation and to improve ventilation.
- Chemical paralysis precludes a neurologic assessment at the receiving destination, which may adversely affect patient management, especially for patients with a head injury. Chemical paralysis will also delay the recognition of seizures. For these and other reasons, long-acting paralytics should not be used routinely.
- Perform and document a neurologic exam prior to the administration of a long-acting paralytic.
- Once a patient has been give a paralytic drug, YOU ARE RESPONSIBLE FOR VENTILATIONS!**
- It is important to secure the ETT or BIAD well; consider a C-collar to better maintain placement.
- If breath sounds are decreased on one side, recheck your ETT depth; the ETT may have migrated into a mainstem bronchus.

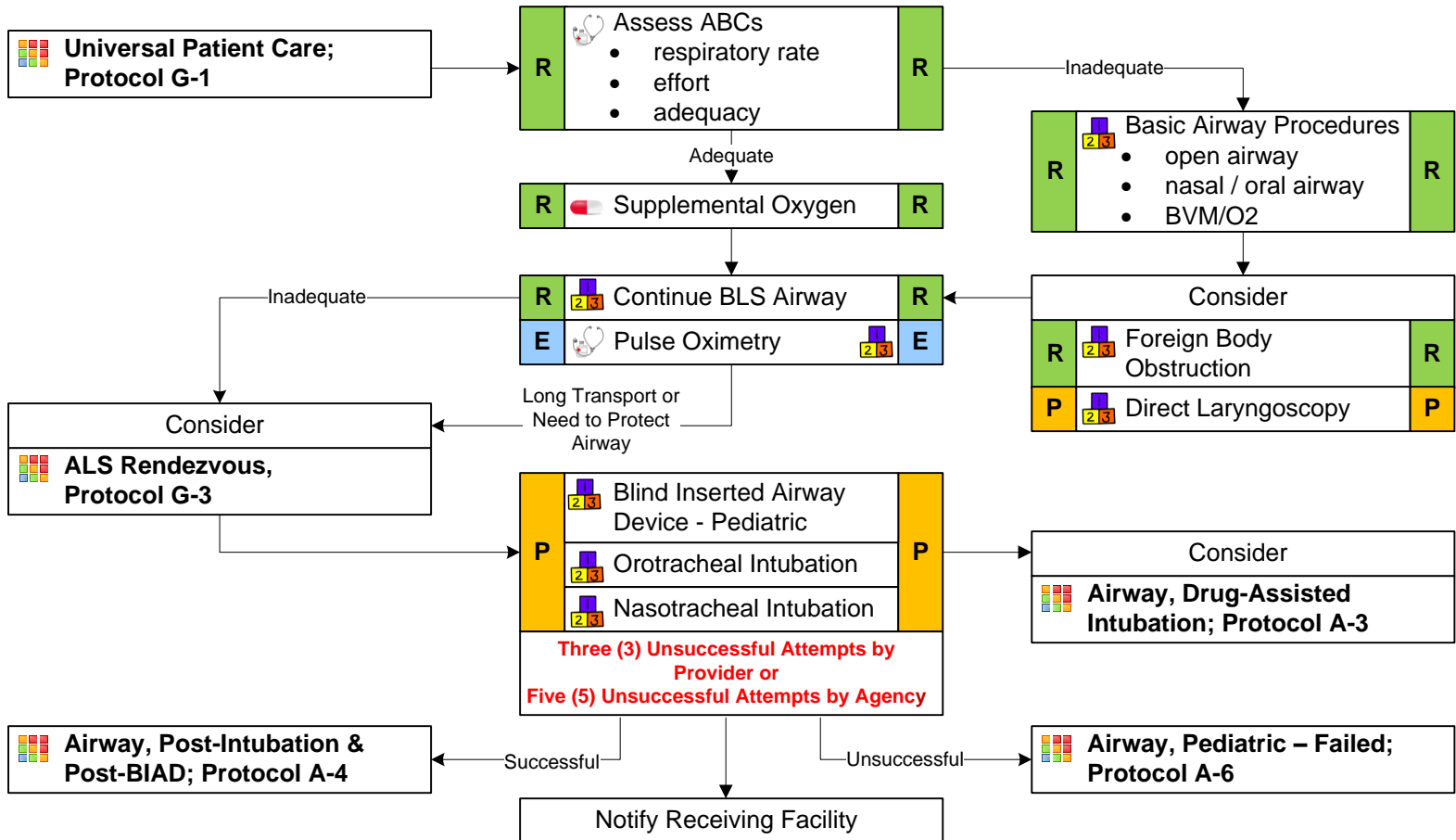
## Performance Improvement Suggestions

- Documentation of the indication for a long-acting paralytic
- Verification of ETT & BIAD position after patient transfers
- Administration of sedation when a patient is chemically paralyzed
- Incidence of inappropriate hyperventilation

## Protocol A-4 – 2014 Airway, Post-Intubation & Post-BIAD

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# Airway, Pediatric



## Pearls

- For the purposes of this protocol, pediatric is defined as < 12 years of age or any patient who can be measured on the Broselow-Luten tape and a secure airway is when the patient is receiving appropriate oxygenation and ventilation.
- Do not assume hyperventilation is psychogenic – use oxygen, not a paper bag.
- If an effective airway is being maintained by BVM with continuous pulse oximetry values of  $\geq 90$ , it is acceptable to continue with basic airway measures instead of using a BIAD or intubation.
- An 'intubation attempt' is defined as insertion of the laryngoscope blade into the mouth or insertion of the endotracheal tube through the nares.
- Paramedics should consider using a BIAD rather than intubation if a difficult airway is anticipated.
- Paramedics should consider drug-assisted intubation in patients that are awake as well as patients who, despite sedation, are persistently combative.
- Ear-to-sternal notch patient positioning will improve your laryngoscopic view; however, maintain C-spine immobilization for patients with a suspected spinal injury.
- Sellick's maneuver, BURP maneuver (Back [posterior], Up, and to pt's Right Pressure), and/or external laryngeal manipulation should be used to assist with difficult intubations.
- Although EtCO<sub>2</sub> detection is the preferred method to confirm ETT and BIAD placement, multiple methods must be used such as an esophageal tube detector device, auscultation of breath sounds, absence of epigastric sounds, ETT misting, chest rise, and patient response (e.g., pulse oximetry, skin color, heart rate).
- If first intubation attempt fails, make an adjustment and try again:
  - Use a different laryngoscope blade size/type or a different ETT size
  - Apply external laryngeal manipulation: e.g. BURP maneuver
  - Change head positioning to achieve ear-to-sternal notch patient positioning (unless c-spine immobilization indicated)
  - It is important to secure the ETT and BIAD well; consider a C-collar to better maintain placement.
  - Change cricoid pressure
  - Gum elastic bougie
- If breath sounds are decreased on the left side after intubation, check your ETT depth & consider right main stem intubation.

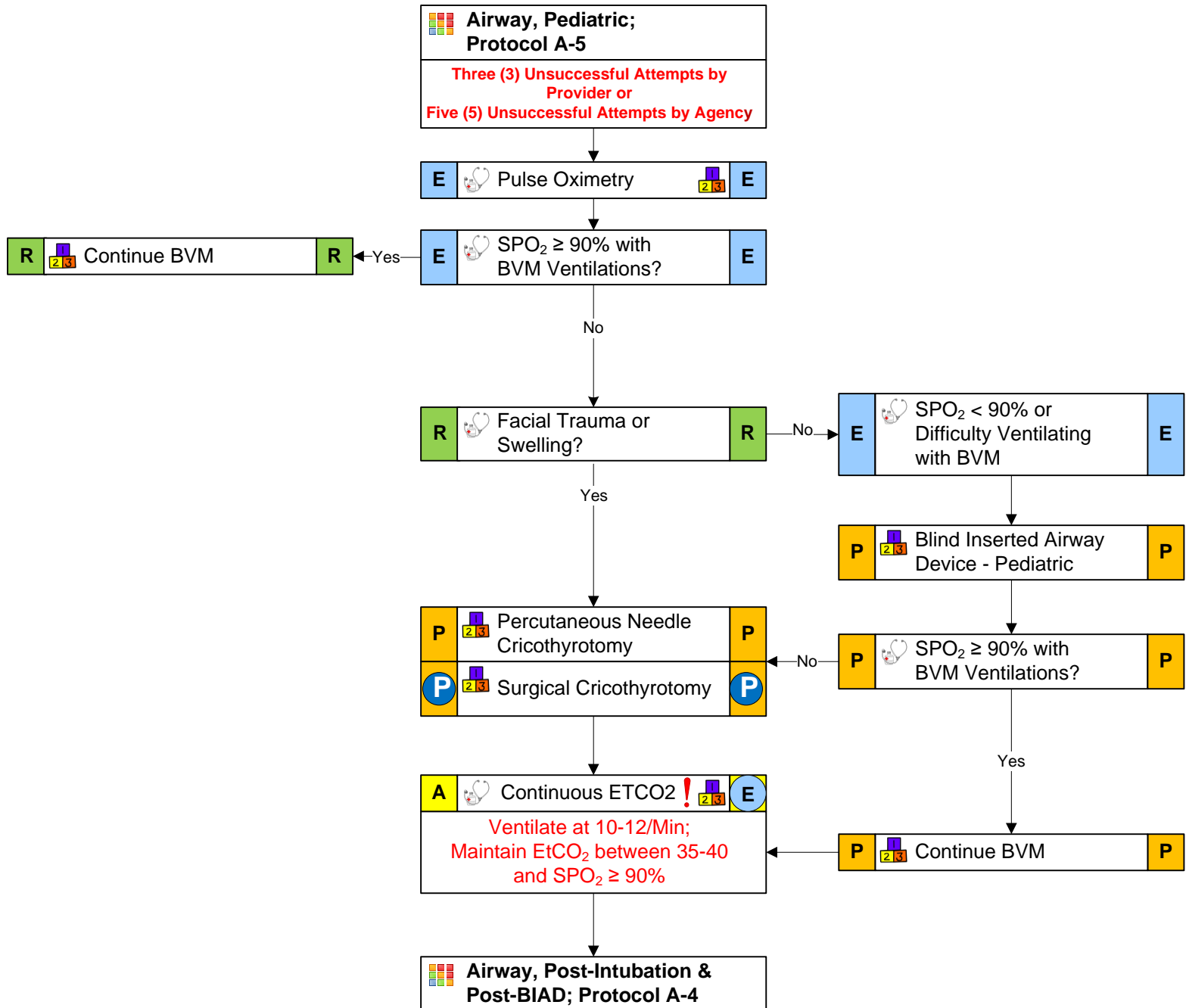
## Performance Improvement Suggestions

- Documentation of pulse oximetry
- Documentation of ventilatory rate

## Protocol A-5 – 2014 Airway, Pediatric

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# Airway, Pediatric – Failed



## Pearls

- Continuous EtCO<sub>2</sub> monitoring should be initiated in all patients with an ETT or BIAD.
- Notify receiving facility AS EARLY AS POSSIBLE when you encounter a difficult or failed airway.
- Initial ventilatory rate should be:
  - < 1 yr: 30/minute
  - 1-5 yrs: 25/minute
  - 6-12 yrs: 20/minute

## Performance Improvement Suggestions

- Number of intubation attempts prior to BIAD or cricothyrotomy
- Documentation of pulse oximetry
- Cricothyrotomy success rate
- Incidence of inappropriate hyperventilation

## Protocol A-6 – 2014 Airway, Pediatric – Failed

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Required protocol for the use of Adrenalin or epi auto-injector designated as 4,OM

# Respiratory Distress, Adult



## History

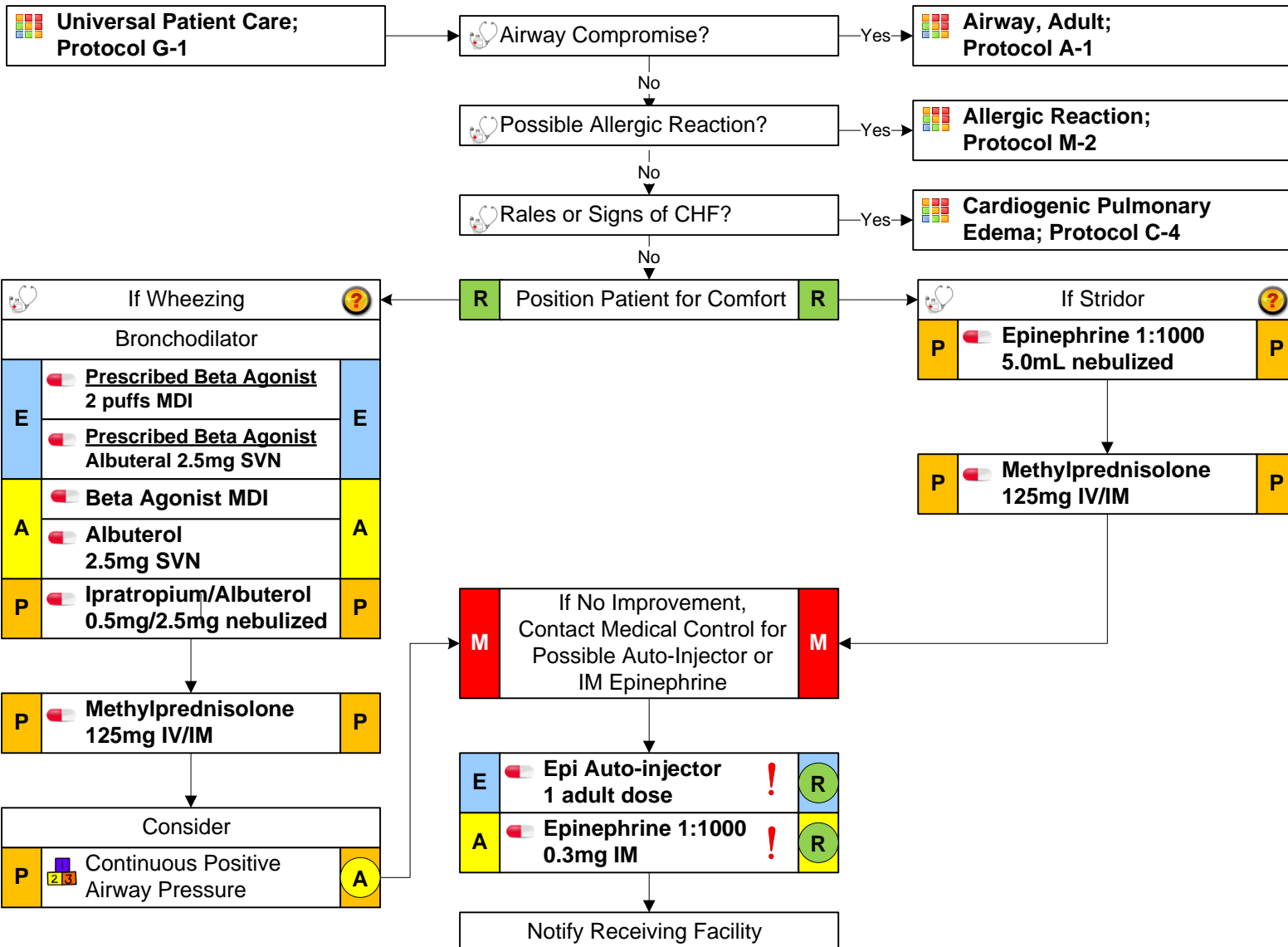
- Asthma, emphysema, congestive heart failure, COPD/chronic bronchitis
- Home treatment (oxygen, nebulizer)
- Medications
  - Theophylline
  - Steroids
  - Inhalers
- Toxin / smoke inhalation
- Trauma

## Signs & Symptoms

- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate & effort
- Wheezing, rhonchi
- Use of accessory muscles
- Fever, cough
- Tachycardia
- Tripod position
- Sniffing position

## Differential

- Asthma / Allergy / Anaphylaxis
- Foreign body / epiglottitis
- Aspiration
- COPD (emphysema, bronchitis)
- Pleural effusion
- Pneumothorax
- Pneumonia / pulmonary embolus
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Toxin / smoke inhalation



## Pearls

- A silent chest in respiratory distress is a sign of pre-respiratory arrest.
- When the patient presents with stridor, anticipate the patient having a difficult airway.
- Congestive heart failure may present with wheezing.

## Performance Improvement Suggestions

- Documentation of reassessment after nebulizer treatment
- Documentation of pulse oximetry

## Protocol A-7 – 2014 Respiratory Distress, Adult

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Airway

# Respiratory Distress, Pediatric



## History

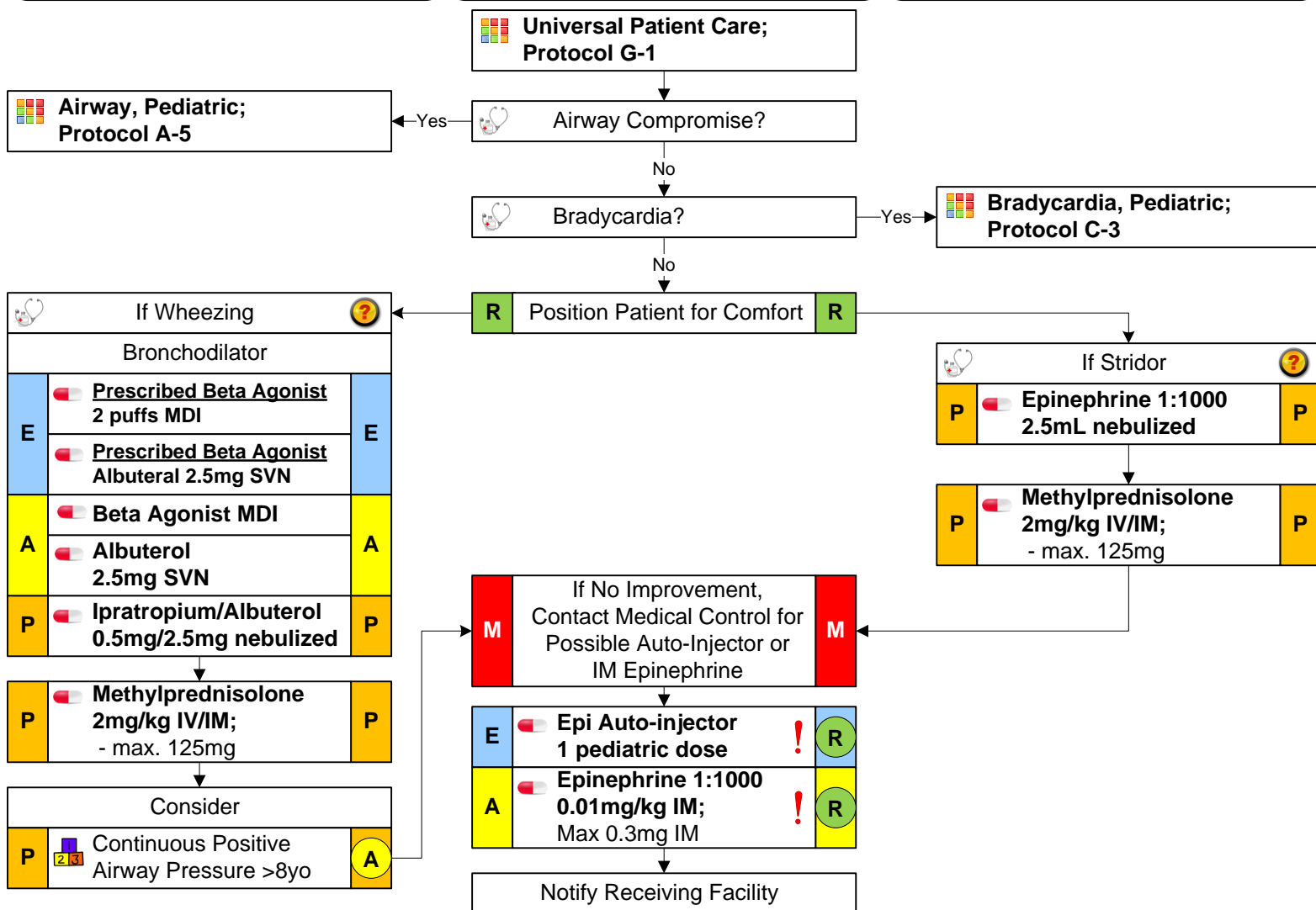
- Time of onset
- Possibility of foreign body in airway
- Past medical history
- Medications
- Fever or respiratory infection
- Ill siblings / family members
- History of trauma

## Signs & Symptoms

- Wheezing or stridor
- Respiratory retractions
- Increased heart rate
- Altered level of consciousness
- Anxious appearance
- Nasal flaring
- Drooling
- Tripod or sniffing position

## Differential

- Allergic reaction
- Asthma
- Foreign body airway obstruction
- Aspiration
- Infection
  - Pneumonia
  - Croup
  - Epiglottitis
- Congenital heart disease
- Inhaled toxin
- Pneumothorax



## Pearls

- Never force a conscious child into a position; they will protect their airway by their body position.
- Avoid unnecessary agitation in a pediatric patient in respiratory distress; agitation (i.e. IV initiation) may worsen an airway obstruction.
- Airway control is the most important component of treatment for respiratory distress.
- Transmitted upper airway sounds may mimic wheezing and rhonchi.
- Bradycardia is defined as < 80 bpm for infants up to the age of 1 year; < 60 bpm for children ages 1-8.

## Performance Improvement Suggestions

- Documentation of pulse oximetry
- Documentation of post-nebulizer treatment assessment

## Protocol A-8 – 2014 Respiratory Arrest, Pediatric

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# Asystole & Pulseless Electrical Activity



## History

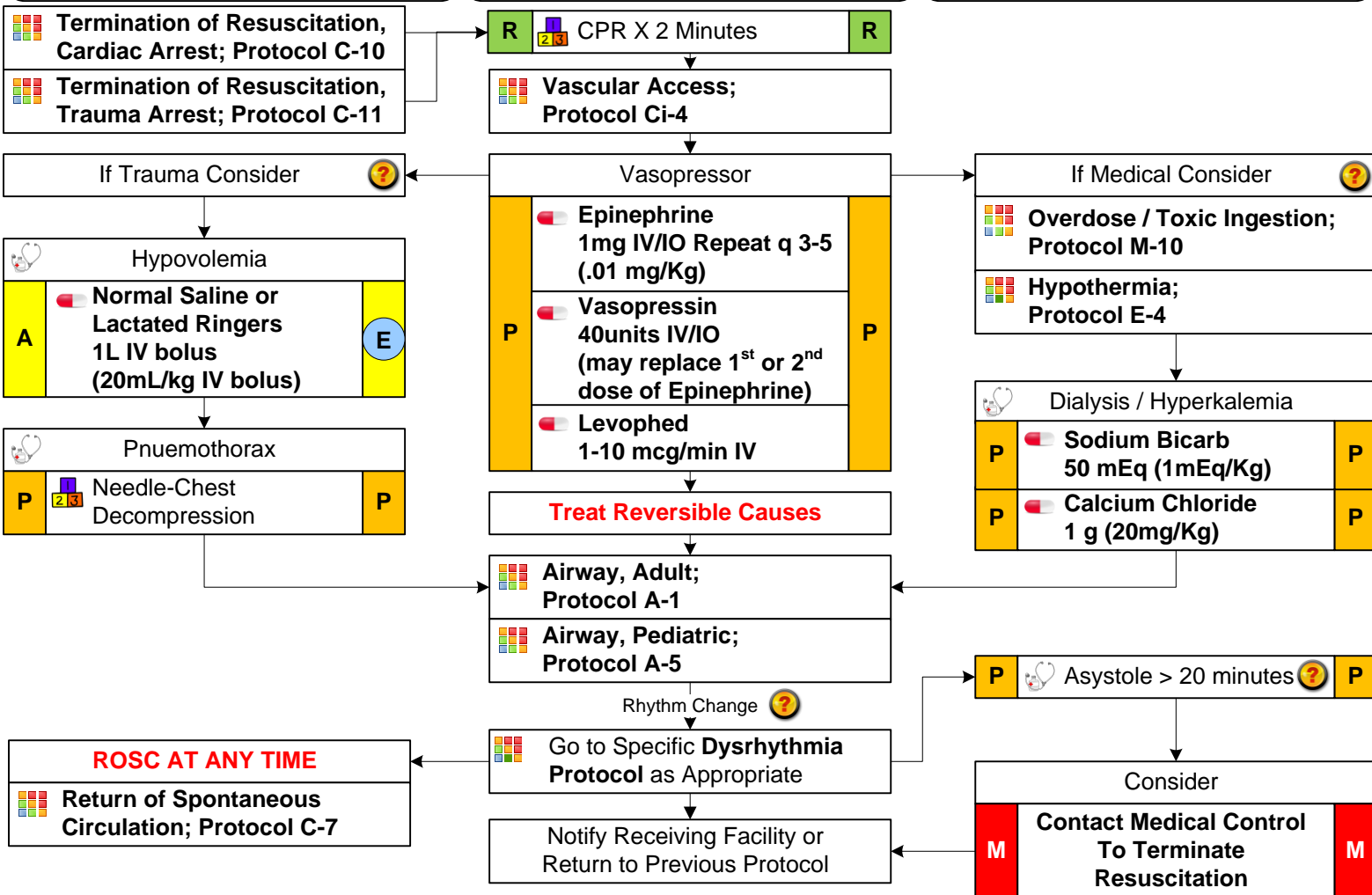
- Age
- Past medical history
- Medications
- Events leading to arrest
- End-stage renal disease
- Estimated "downtime"
- Suspected hypothermia
- Suspected overdose
- DNR or POST form

## Signs & Symptoms

- Pulseless
- Apneic
- EKG rhythm
- No auscultated heart tones

## Differential

- Medical or trauma
- Hypoxia
- Potassium levels (hypo- / hyper-)
- Drug overdose
- Acidosis
- Hypothermia
- Device / lead error
- Death



## Pearls

- Always confirm asystole in more than one lead.
- Available evidence suggests that the routine use of Atropine during PEA or asystole is unlikely to have a therapeutic benefit (Class IIb, level of evidence B). For this reason, in 2010, the AHA removed Atropine from the cardiac arrest algorithm.
- Similarly, transcutaneous pacing is not recommended for routine use in cardiac arrest (Class III, level of evidence B).
- Successful resuscitation of asystole or PEA requires the identification and correction of a reversible cause such as:
  - Acidosis
  - Hypoxia
  - Tension Pneumothorax
  - Hypovolemia
  - Tamponade
  - Hypothermia
  - Hyperkalemia
  - Overdose (narcotics, tricyclic antidepressants, calcium channel blockers, beta blockers)

## Performance Improvement Suggestions

- Administration of Epinephrine every 3-5 minutes
- Documentation of EKG rhythm & rhythm strip present

## Protocol C-1 – 2014 Asystole & Pulseless Electrical Activity

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Cardiac

# Bradycardia, Adult



## History

- Past medical history
- Medications
  - Beta-blockers
  - Calcium channel blockers
  - Clonidine
  - Digoxin
- Pacemaker
- Insecticide exposure
- Renal failure / dialysis

## Signs & Symptoms

- Heart rate < 60 bpm
- Hypotension
- Acute altered mental status
- Chest pain
- Acute congestive heart failure
- Syncope
- Respiratory distress

## Differential

- Acute myocardial infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athleticism
- Elevated intracranial pressure (head injury, stroke)
- Spinal cord injury
- Heart block
- Overdose
- Hyperkalemia

**Universal Patient Care; Protocol G-1**

**P** Cardiac Monitor **P**

Heart Rate < 60 bpm causing:

- Hypotension
- Acute altered mental status
- Chest pain
- Acute CHF

**P** Monitor Heart Rate & Reassess **P**

**P** Cardiopulmonary Compromise? **P**

Consider  
**Chest Pain: Cardiac & STEMI; Protocol C-5**

STEMI

**P** 12-Lead EKG **E**

**P** **Atropine 0.5mg IV**  
May repeat q 3-5 min;  
Maximum 3mg **P**

Heart Rate < 60 bpm?

**P** Transcutaneous Pacing **P**

Dialysis / Hyperkalemia

**P** **Sodium Bicarb 50 mEq (1mEq/Kg)** **P**

**P** **Calcium Chloride 1 g (20mg/Kg)** **P**

**P** **Normal Saline or Lactated Ringers 500mL IV bolus** **P**

**P** **Dopamine 2-10mcg/kg/min IV**  
 **Epinephrine 2-10mcg/min IV** **P**

Consider  
**Overdose / Toxic Ingestion; Protocol M-10**

Notify Receiving Facility

## Pearls

- Treatment of bradycardia is based upon the presence or absence of symptoms. If the patient is symptomatic, treat them; if the patient is asymptomatic, monitor them.
- In a dialysis patient with a wide complex bradycardia, consider hyperkalemia. Contact medical control for possible treatment with Calcium and Sodium Bicarbonate.

## Performance Improvement Suggestions

- Documentation of the presence / absence of overdose, toxic exposure, or dialysis
- Documentation of response to treatment
- Documentation of pacing energy level at capture

## Protocol C-2 – 2014 Bradycardia, Adult

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Cardiac

# Bradycardia, Pediatric



## History

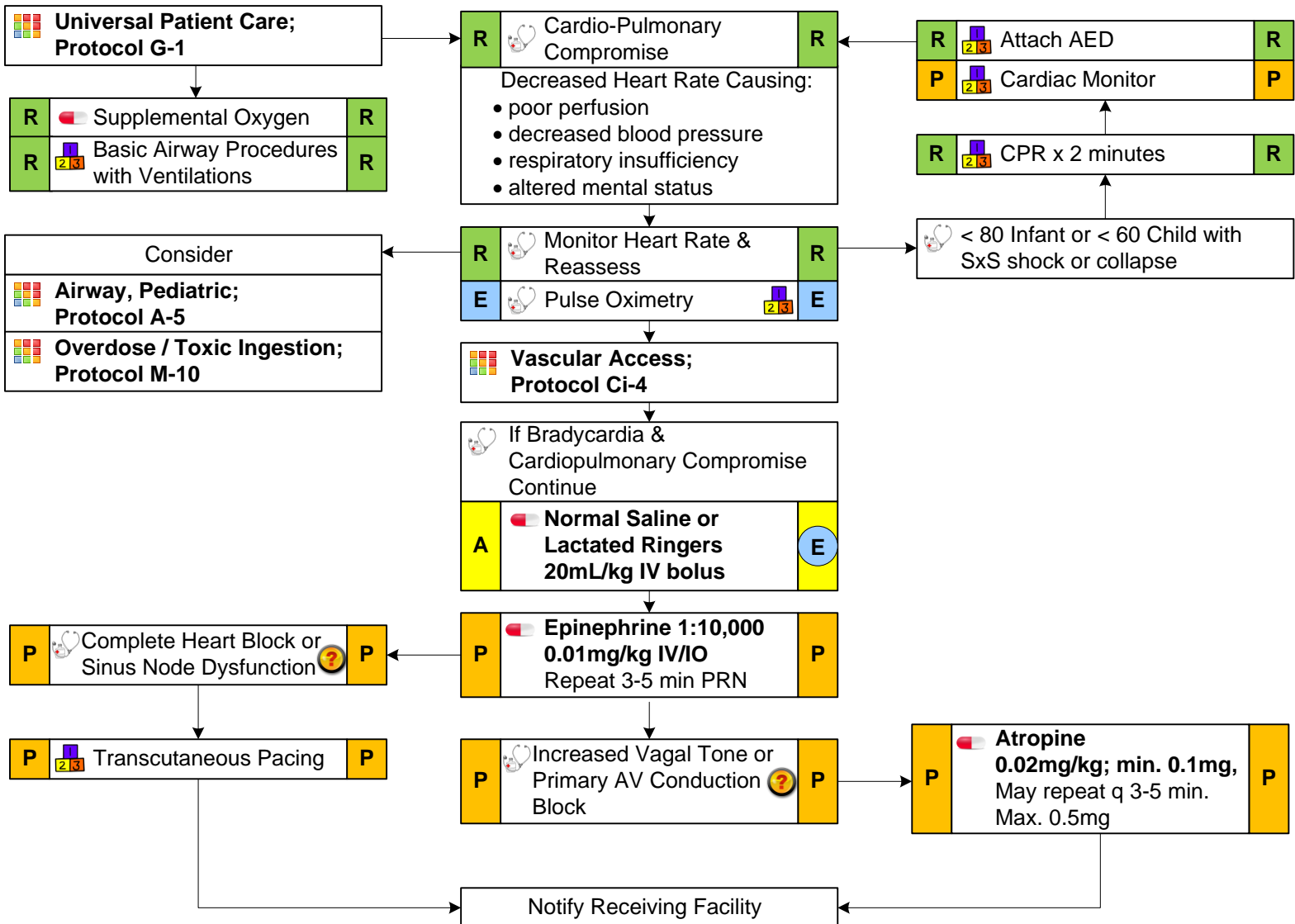
- Past medical history
- Respiratory distress or arrest
- Suspected choking victim
- Apnea
- Possible toxic or poison exposure
- Congenital disease
- Medication (maternal or infant)

## Signs & Symptoms

- Decreased heart rate
- Delayed capillary refill / cyanosis
- Mottled, cool skin
- Hypotension
- Altered level of consciousness

## Differential

- Respiratory failure:
  - Foreign body airway obstruction
  - Secretions
  - Infection (croup, epiglottitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin or medication reaction



## Pearls

- Bradycardia in pediatric patients is usually due to airway problems and hypoxia.
- Use the Broselow-Luten tape for drug dosages and normal range of vital signs.

## Performance Improvement Suggestions

- Documentation of the presence / absence of overdose or toxic exposure
- Documentation of response to treatment
- Documentation of pacing energy level at capture

## Protocol C-3 – 2014 Bradycardia, Pediatric

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# Cardiogenic Pulmonary Edema



## History

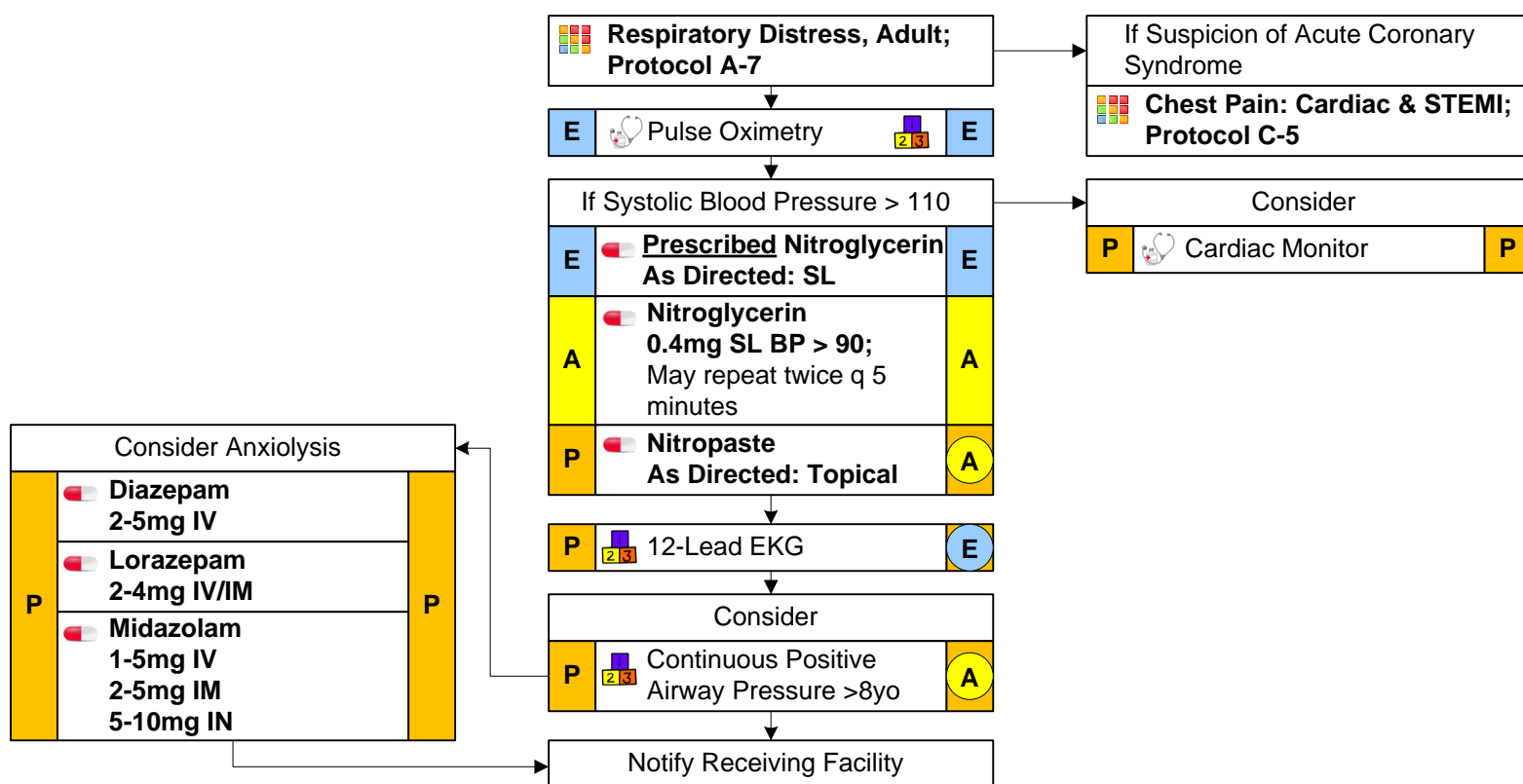
- History of congestive heart failure or pulmonary edema
- History of hypertension
- History of myocardial infarction
- Past medical history
- Medications
  - Lasix
  - Digoxin
- Viagra, Levitra, or Cialis use

## Signs & Symptoms

- Respiratory distress
- Bilateral rales
- Orthopnea
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema
- Diaphoresis
- Hypotension / shock
- Chest pain
- Apprehension

## Differential

- Myocardial infarction
- Congestive heart failure
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pericardial tamponade
- Toxic exposure
- Non-cardiogenic pulmonary edema
- Renal failure / dialysis



## Pearls

- Due to potential severe hypotension, avoid Nitroglycerin for any patient who has used Viagra or Levitra in the past 24 hours or Cialis in the past 36 hours.
- Even though it has historically been a mainstay of EMS treatment, Furosemide and narcotics have NOT been shown to improve the outcomes of prehospital patients with pulmonary edema and are no longer recommended for treatment.
- If a patient has taken Nitroglycerin without relief, consider the potency of the medication.
- Consider the risk of myocardial infarction in patients presenting with pulmonary edema; diabetics and geriatric patients often present with atypical pain or only have generalized complaints.
- Carefully monitor the level of consciousness, blood pressure, and respiratory status with any interventions used.
- Discontinue the use of sublingual Nitroglycerin if Nitropaste is used.
- Allow the patient to be in their position of comfort in order to maximize their breathing efforts.
- Remove Nitropaste if the patient's systolic blood pressure is < 100.
- Limit IV fluids in patients presenting with pulmonary edema.

## Performance Improvement Suggestions

- Documentation of rate of intubation upon hospital arrival
- Documentation of blood pressure after each Nitroglycerin dose

## Protocol C-4 – 2014 Cardiogenic Pulmonary Edema

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# Chest Pain: Cardiac & STEMI



## History

- Age
- Cardiac risk factors
- Recent physical exertion
- Palliation / provocation
- Quality (crampy, constant, sharp, dull, etc.)
- Region / radiation / referred
- Severity (1-10 pain scale)
- Time (onset, duration, repetition)

## Signs & Symptoms

- Chest pain or discomfort
- Location (substernal, epigastric, arm, jaw, neck, shoulder)
- Pale, diaphoretic
- Shortness of breath
- Nausea / vomiting

## Differential

- Angina versus myocardial infarction
- Pericarditis / pneumothorax
- Pulmonary embolism
- Asthma / COPD
- Aortic dissection or aneurysm
- GE reflux / hiatal hernia
- Esophageal spasm
- Chest wall injury or pain
- Pleural pain / pleurisy
- Cocaine or methamphetamine use

Consider

Go to Specific **Dysrhythmia Protocol** as Appropriate

**Universal Patient Care; Protocol G-1**

**P** 12-Lead EKG **E**

**R** Supplemental Oxygen **R**

**E** Aspirin 325mg PO **E**

Vasodilator

**E** Nitroglycerin 0.4mg SL if Prescribed & BP >90; May repeat twice q 5 minutes **E**

**A** Nitroglycerin 0.4mg SL/ 1.0 Inch Paste- topical maintaining BP > 90; May repeat twice q 5 minutes **A**

Confirmed/Suspected STEMI **?**

**R** Apply AED Pads **R**

**P** Apply Defibrillator Pads **P**

**Patient Destination; Protocol G-9**

**Vascular Access; Protocol Ci-4**

**A** Consider Second IV En Route **E**

**Pain Management, Adult; Protocol G-6**

Notify Receiving Facility

## Pearls

- Due to potential severe hypotension, avoid Nitroglycerin for any patient with suspected inferior MI or who has used Viagra or Levitra in the past 24 hours or Cialis in the past 36 hours.
- Patients with ST-Elevation Myocardial Infarction (STEMI) should be transported to the appropriate destination based on the EMS STEMI Plan. Depending on local capabilities, the treatment and transport of STEMI patients may be optimized for either percutaneous coronary intervention (PCI) or thrombolytic therapy. The Plan may also incorporate air medical transport to ensure timely reperfusion.
- Diabetic, geriatric, and female patients may have atypical pain or only generalized complaints such as weakness.
- A reperfusion checklist completed prior to hospital arrival may facilitate timely thrombolytic therapy. Consult with your local hospital to determine the desirability of a prehospital reperfusion checklist.
- Notify the receiving facility as soon as feasible after STEMI identification. If the patient has seen a cardiologist previously, provide the name of the cardiologist.

## Performance Improvement Suggestions

- Documentation of time to first 12-lead EKG
- Accuracy of STEMI identification on 12-lead EKG

## Protocol C-5 – 2014 Chest Pain: Cardiac and STEMI

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Cardiac



# Pulseless Arrest, Pediatric



## History

- Past medical history
- Time of arrest
- Medications
- Possibility of foreign body in airway
- Hypothermia

## Signs & Symptoms

- Unresponsive
- Apneic
- Pulseless

## Differential

- Respiratory failure:
  - Foreign body airway obstruction
  - Secretions
  - Infection (croup, epiglottitis)
- Congenital heart disease
- Non-accidental trauma
- Child abuse



**Termination of Resuscitation  
Cardiac Arrest; Protocol C-10**

R	CPR	R
R	Automated Defibrillation	R
P	Cardiac Monitor	P

Shock Advised?  
Ventricular Fibrillation / Tachycardia

Yes

R	Defibrillate: 1x @ AED Peds Setting	R
P	Defibrillate: 1x @ 2J/Kg	P
R	CPR x 2 minutes	R

P	Defibrillate: 1x @ 4J/Kg	P
P	<b>Epinephrine 1: 10,000</b> 0.01mg/kg IV/IO; max 1mg May repeat q 3-5 min.	P
R	CPR x 2 minutes	R

P	Defibrillate: 1x @ > 4J/Kg max 10J/Kg or adult dose, whichever lower	P
---	---	---

Rhythm Change  
Go to Specific **Dysrhythmia Protocol** as Appropriate

No

Asystole / PEA		
<b>Vascular Access; Protocol Ci-4</b>		
P	<b>Epinephrine 1: 10,000</b> 0.01mg/kg IV/IO; max 1mg May repeat q 3-5 min.	P
R	CPR x 2 minutes	R

## Treat Reversible Causes

P	Asystole in 3 Leads	P
P	Asystole > 20 minutes	P

R	Chest Compressions by EMS 20 Minutes; BVM AED Advises No Shock	R
---	---	---

**Termination of Resuscitation  
Cardiac Arrest; Protocol C-10**



**Airway, Pediatric;  
Protocol A-5**



**Vascular Access;  
Protocol Ci-4**

P	<b>Amiodarone 5mg/kg IV/IO; max 300mg</b> May repeat x2	P
---	--	---

**ROSC AT ANY TIME**  
**Return of Spontaneous Circulation; Protocol C-7**

## Pearls

- AEDs may have a pediatric attenuating system that should be used for infants and children up to 25kg (approximately 8 years of age). If an attenuator is not available, use an AED with standard electrodes.
- For manual defibrillators, use the largest paddles or self-adhering electrodes that will fit on the chest without touching each other. When possible, leave approximately 3cm between the paddles or electrodes.
- Monophasic and biphasic waveform defibrillators should use the same energy levels noted above.
- Successful resuscitation of asystole or PEA requires the identification and correction of a reversible cause such as:
  - Acidosis
  - Hypoxia
  - Tension Pneumothorax
  - Hypovolemia
  - Tamponade
  - Hypothermia
  - Hyperkalemia
  - Overdose (narcotics, tricyclic antidepressants, calcium channel blockers, beta blockers)

## Performance Improvement Suggestions

- Documentation of timeline: dispatch, patient contact, decision to transport, and termination of resuscitation (if applicable)

## Protocol C-6 – 2014 Pulseless Arrest, Pediatric

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Cardiac

# Return of Spontaneous Circulation



## History

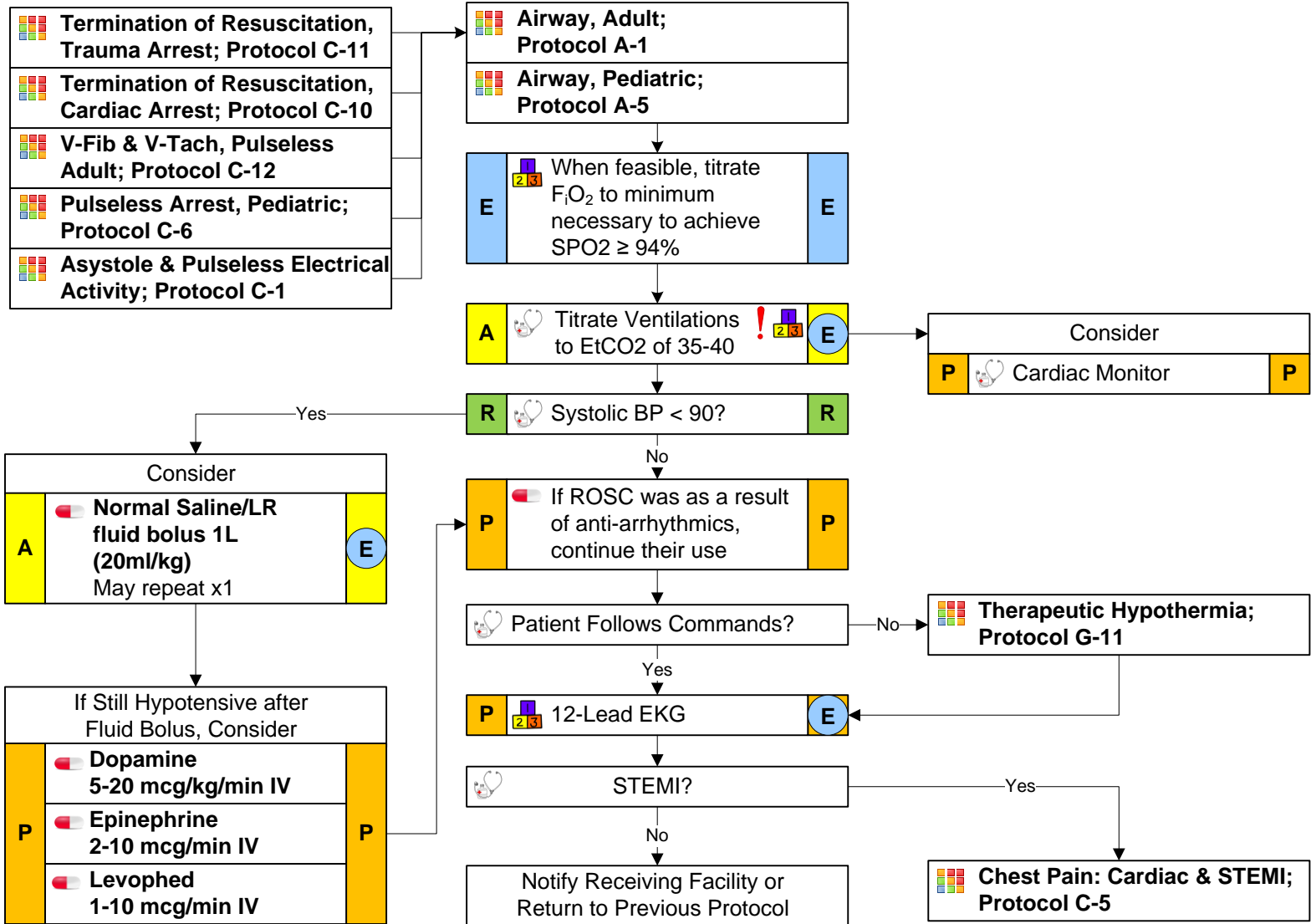
- Respiratory arrest
- Cardiac arrest

## Signs & Symptoms

- Return of pulse

## Differential

- Continue to address specific differentials associated with the original dysrhythmia



## Pearls

- Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post-resuscitation phase and must be avoided!
- Most patients immediately after post-resuscitation will require ventilatory assistance.
- The condition of post-resuscitation patients fluctuates rapidly and continuously; they will require close monitoring. Vital signs should be checked at least every five minutes.
- Common causes of post-resuscitation hypotension include hyperventilation, hypovolemia, pneumothorax, and medication reaction(s) to ALS drugs.

## Performance Improvement Suggestions

- Documentation of vital signs every 5 minutes
- Documentation of treatment of hypotension
- Documentation of 12-lead EKG, if obtained

## Protocol C-7 – 2014 Return of Spontaneous Circulation

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Cardiac

# Tachycardia With Pulse, Adult



## History

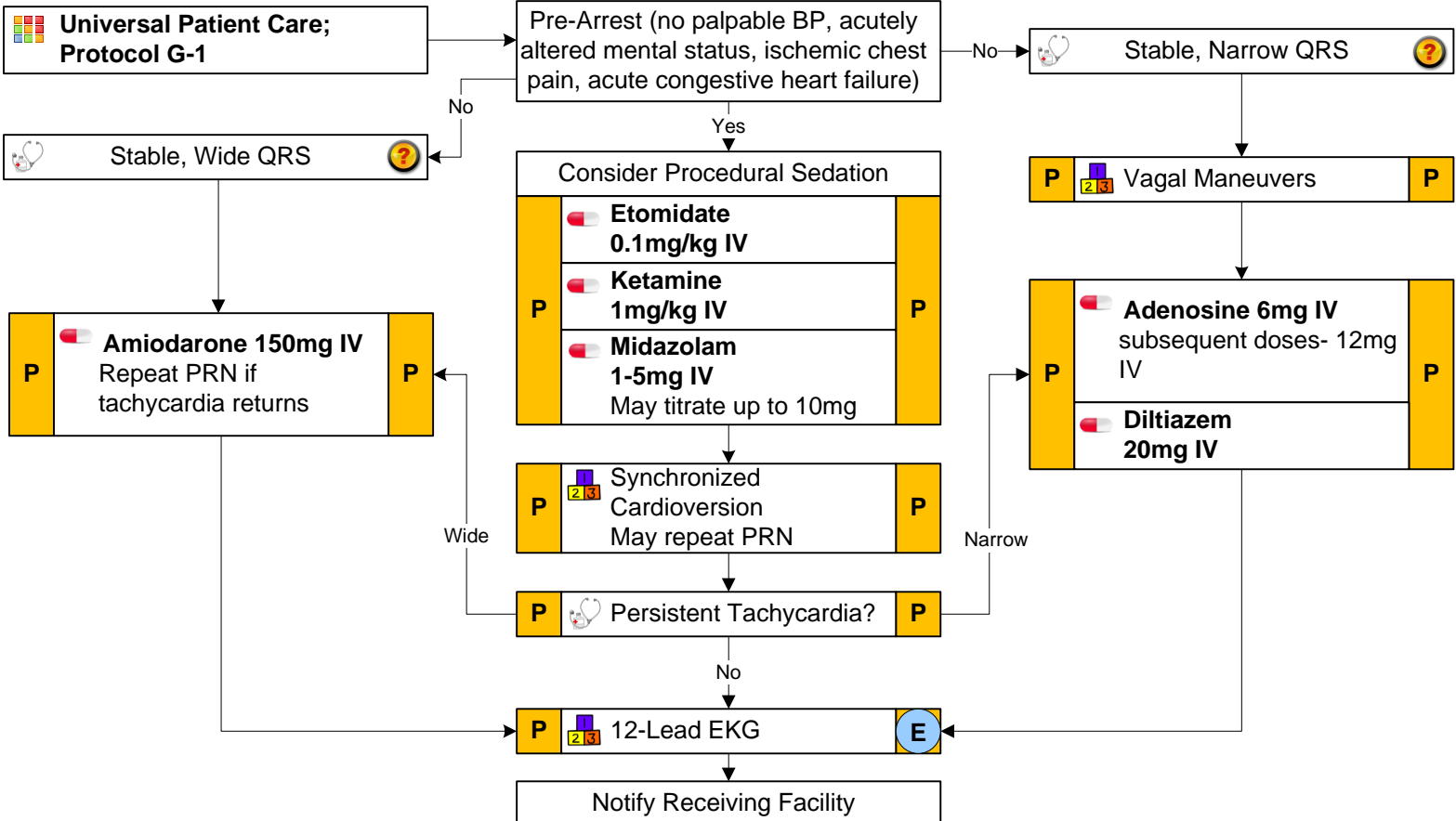
- Stimulant use
  - Medications
  - Diet (caffeine, energy drinks)
  - Drugs (nicotine, cocaine)
- Previous myocardial infarction / stents/coronary artery bypass grafting
- History of palpitations / heart racing / atrial fibrillation / supraventricular tachycardia / Wolff-Parkinson-White syndrome
- Pacemaker / Automatic Implantable Cardioverter Defibrillator
- Syncope / near syncope
- Cardiomyopathy / congestive heart failure

## Signs & Symptoms

- Heart rate > 150/minute
- QRS duration
- Lightheadedness
- Chest pain
- Dyspnea

## Differential

- Sinus tachycardia
- Ventricular tachycardia
- Supraventricular tachycardia
  - Atrial fibrillation / flutter
  - Wolff-Parkinson-White syndrome
  - Multifocal atrial tachycardia
- Myocardial infarction
- Electrolyte imbalance
- Hypoxia / pulmonary embolism
- Hypovolemia / anemia
- Drug effect / overdose
- Thyroid storm



## Pearls

- Apply an AED if the patient becomes pulseless or unconscious.
- If the patient has a history of Wolff-Parkinson-White (WPW), **DO NOT** administer Adenosine or a calcium channel blocker (e.g. Diltiazem) without first contacting Medical Control.
- Adenosine may not be effective in atrial fibrillation / flutter, yet it is not harmful.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.
- Polymorphic ventricular tachycardia (Torsades de Pointes) may benefit from Magnesium Sulfate – contact Medical Control first.

## Performance Improvement Suggestions

- Documentation of initial rhythm with a rhythm strip
- Documentation of response to treatment

## Protocol C-8 – 2014 Tachycardia With Pulse, Adult

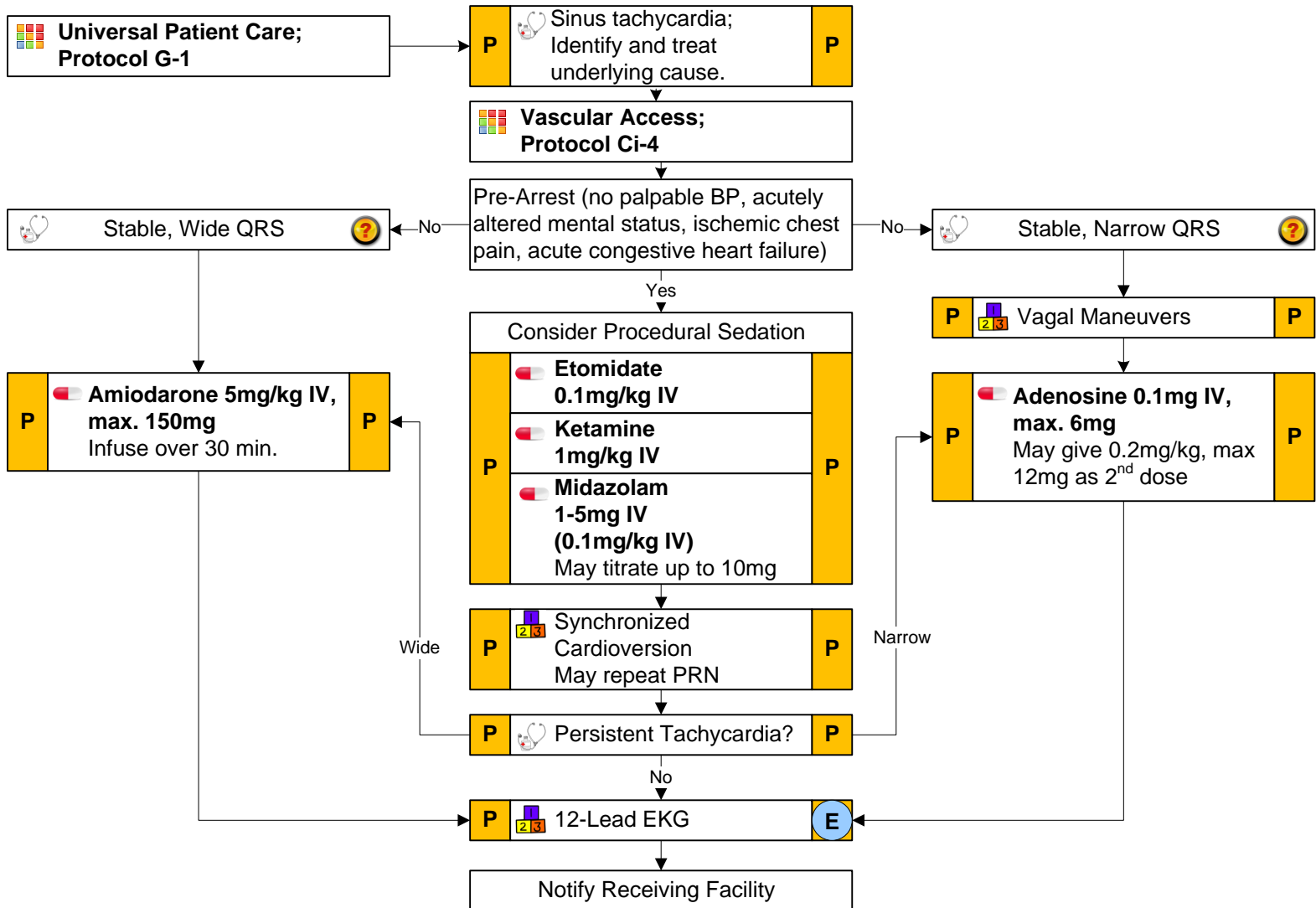
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# Tachycardia With Pulse, Pediatric



<b>History</b> <ul style="list-style-type: none"> <li>Stimulants <ul style="list-style-type: none"> <li>Medications</li> <li>Diet (caffeine, energy drinks)</li> <li>Drugs (nicotine, cocaine)</li> </ul> </li> <li>History of heart disease / murmur</li> <li>Syncope / near syncope</li> <li>Fever</li> <li>Vomiting / diarrhea</li> </ul>	<b>Signs and Symptoms</b> <ul style="list-style-type: none"> <li>Infant HR <math>\geq 220/\text{min}</math></li> <li>Child HR <math>\geq 180/\text{min}</math></li> <li>QRS duration</li> <li>Lightheadedness</li> <li>Tachypnea</li> <li>Poor perfusion</li> </ul>	<b>Differential</b> <ul style="list-style-type: none"> <li>Sinus tachycardia</li> <li>Supraventricular tachycardia <ul style="list-style-type: none"> <li>Atrial fib / flutter</li> <li>SVT / WPW / MAT</li> </ul> </li> <li>Ventricular tachycardia</li> <li>Electrolyte imbalance</li> <li>Hypoxia / PE / pneumothorax</li> <li>Hypovolemia or anemia</li> <li>Drug effect / overdose</li> <li>Fever / infection / sepsis</li> <li>Anxiety / pain / emotional stress</li> </ul>
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## Universal Patient Care; Protocol G-1



- Pearls**
- Apply an AED if patient becomes pulseless or unconscious.
  - 12 lead ECG may assist with rhythm identification but should not delay treatment.
  - If patient has history of Wolfe Parkinson White (WPW), DO NOT administer adenosine without contacting Medical Control.
  - Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.
  - Polymorphic ventricular tachycardia (Torsades de Pointes) may benefit from magnesium sulfate - contact Medical Control first.

- Performance Improvement Suggestions**
- Documentation of initial rhythm with a rhythm strip
  - Documentation of response to treatment

## Protocol C-9 – 2014 Tachycardia with Pulse, Pediatric

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# Termination of Resuscitation: Cardiac Arrest



## History

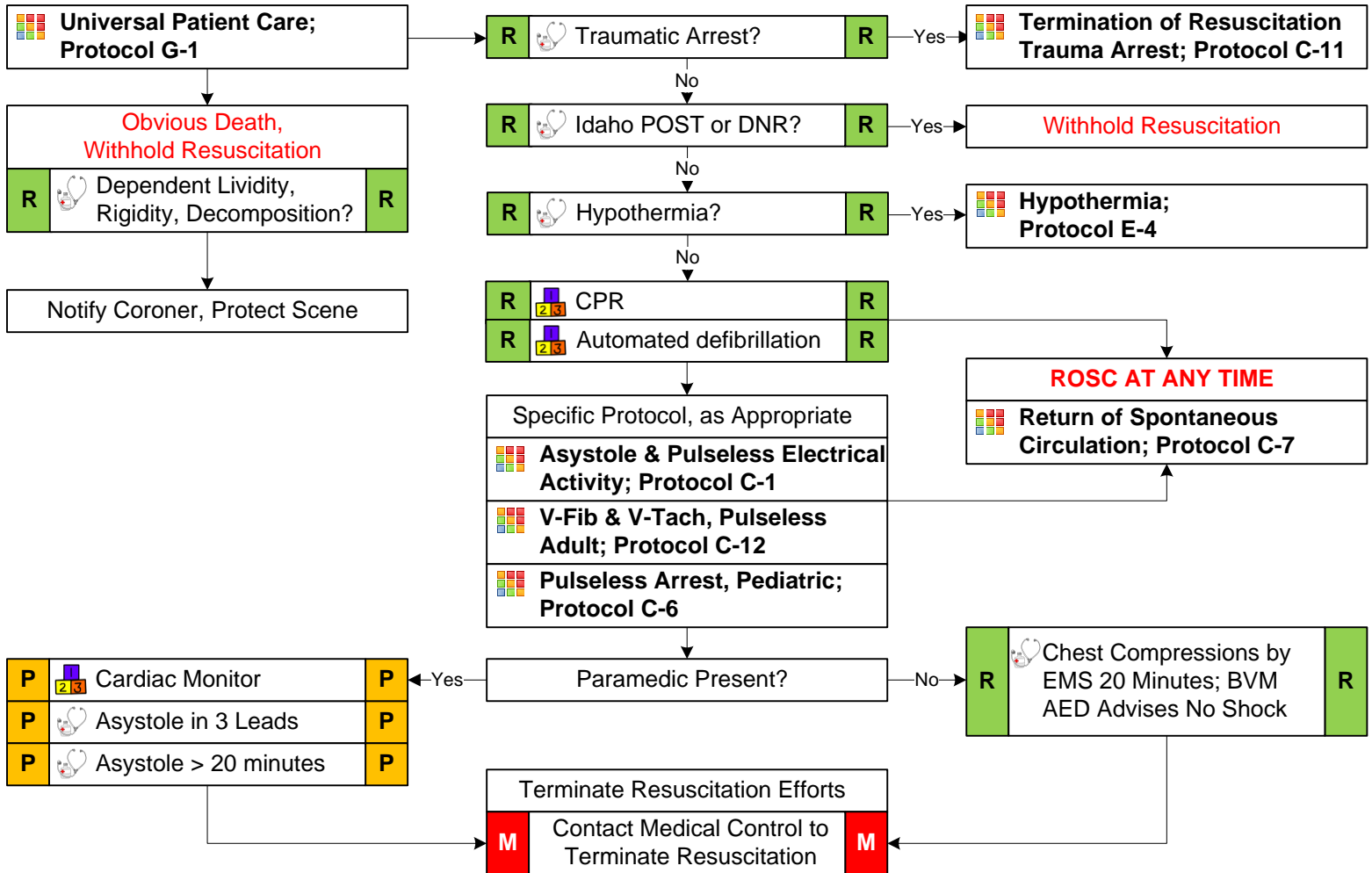
- Events leading up to arrest
- Estimated down-time
- Past medical history & medications
- Existence of terminal illness
- DNR, POST, Living Will, Durable Power of Attorney for Health Care
- Bystander CPR

## Signs & Symptoms

- Unresponsive
- Apneic
- Pulselessness

## Differential

- Medical versus trauma
- Ventricular fibrillation versus pulseless ventricular tachycardia
- Asystole
- Pulseless electrical activity (PEA)



## Pearls

- During treatment of traumatic arrest patients, neither rescuers nor bystanders should be at risk.
- The decision to transport is influenced by the mechanism of injury, proximity to the hospital, and the patient's age.
- Manual chest compressions in a moving ambulance are generally ineffective and potentially hazardous to the rescuer(s).
- Special circumstances (i.e. family needs, victim location, maternal arrest) may necessitate transport without the return of spontaneous circulation (ROSC).

## Performance Improvement Suggestions

- If resuscitation efforts are terminated, documentation of all required criteria
- Documentation of the timeline: dispatch, patient contact, and decision to terminate resuscitation
- Documentation of asystole confirmed in multiple leads
- Documentation of the application of an AED

## Protocol C-10 – 2014 Termination of Resuscitation: Cardiac Arrest

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# Termination of Resuscitation: Trauma Arrest



## History

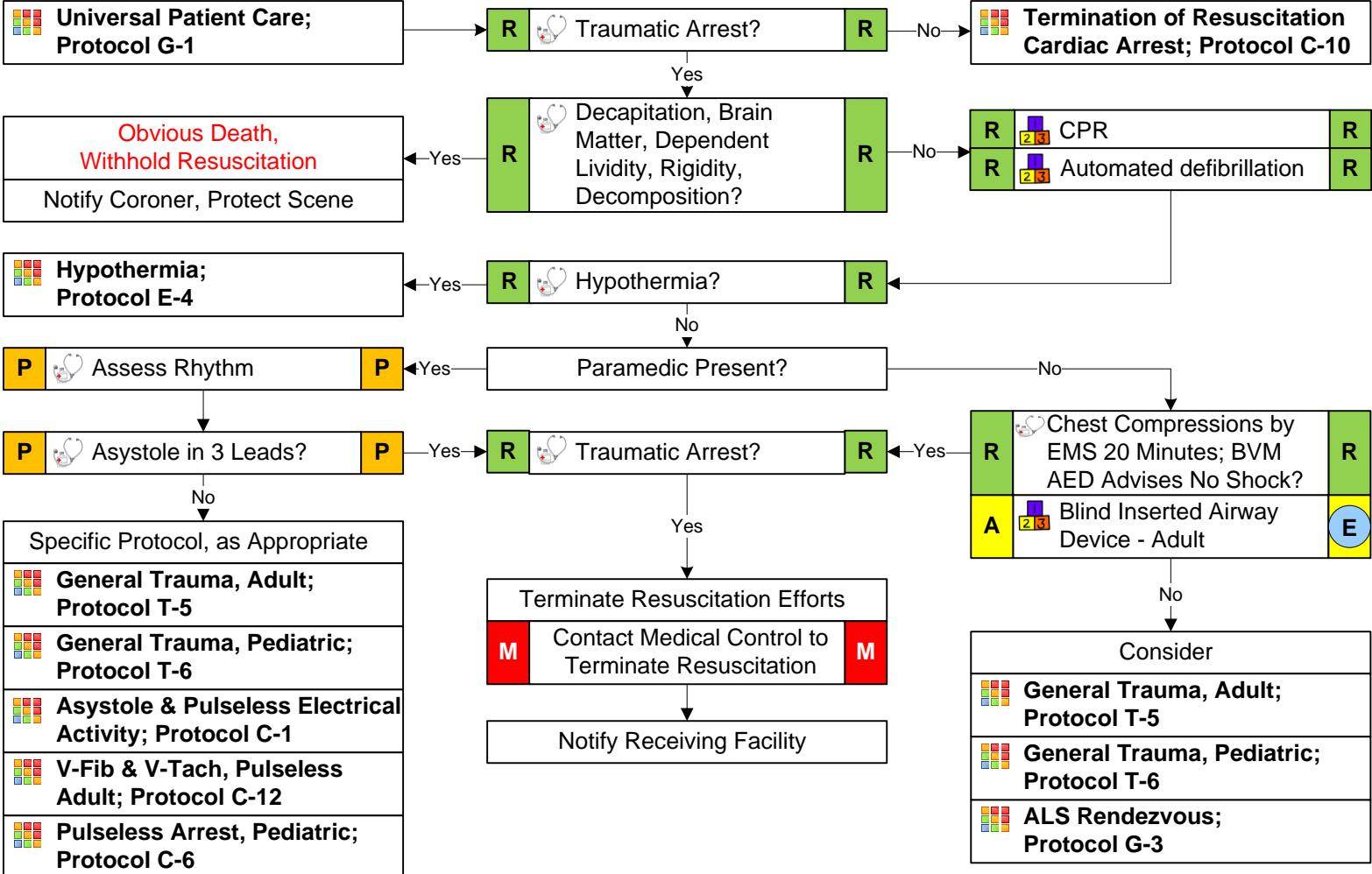
- Events leading up to arrest
- Estimated down-time
- Past medical history
- Medications
- Existence of terminal illness
- DNR, POST, Living Will, Durable Power of Attorney for Health Care
- Bystander CPR

## Signs & Symptoms

- Unresponsive
- Apneic
- Pulseless

## Differential

- Medical versus trauma
- Ventricular fibrillation versus pulseless ventricular tachycardia
- Asystole
- Pulseless electrical activity (PEA)



## Pearls

- Survival from traumatic arrest is rare.
- During treatment of traumatic arrest patients, neither rescuers nor bystanders should be at risk.
- The decision to transport is influenced by the mechanism of injury, proximity to the hospital, and the patient's age.
- Manual chest compressions in a moving ambulance are generally ineffective and potentially hazardous to the rescuer(s).
- Special circumstances (i.e. family needs, victim location, maternal arrest) may necessitate transport without the return of spontaneous circulation (ROSC).

## Performance Improvement Suggestions

- If resuscitation efforts are terminated, documentation of all required criteria
- Documentation of the timeline: dispatch, patient contact, and decision to terminate resuscitation
- Documentation of asystole confirmed in multiple leads
- Documentation of the application of an AED

## Protocol C-11 – 2014 Termination of Resuscitation: Trauma Arrest

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Cardiac

# Ventricular Fibrillation/Tachycardia Pulseless, Adult



## History

- Past medical history
- Time of arrest
- Medications
- Possibility of foreign body in airway
- Hypothermia
- Electrocution
- Near drowning
- DNR

## Signs & Symptoms

- Unresponsive
- Apneic
- Pulseless

## Differential

- Medical vs. Trauma
- Artifact or monitor failure
- Asystole



**Termination of Resuscitation:  
Cardiac Arrest; Protocol C-10**

R	CPR	R
R	Attach AED	R
P	Cardiac Monitor	P

	Shockable Rhythm?	
	Ventricular Fibrillation/Tachycardia	

R	Automated Defibrillation	R
P	Manual Defibrillation	P
R	CPR x 2 minutes	R

Consider
<b>Airway, Adult; Protocol A-1</b>
<b>Vascular Access; Protocol Ci-4</b>

P	<b>Epinephrine 1mg IV/IO; repeat q 3-5 min.</b>	P
---	---	---

	Shockable Rhythm?	
--	-------------------	--

Consider
<b>ROSC AT ANY TIME</b>
<b>Return of Spontaneous Circulation; Protocol C-7</b>
<b>Termination of Resuscitation Cardiac Arrest; Protocol C-10</b>
<b>Go to Specific Dysrhythmia Protocol as Appropriate</b>

No		
R	Automated Defibrillation	R
P	Manual Defibrillation	P
R	CPR x 2 minutes	R

P	<b>Amiodarone 300mg IV/IO; Repeat 150 mg</b>	P
	<b>Lidocaine 1.5mg/kg IV Repeat x1 q 5 min</b>	P

Notify Receiving Facility
---------------------------

Repeat if  
Unchanged

## Pearls

- For manual defibrillators, use the largest paddles or self-adhering electrodes that will fit on the chest without touching each other. When possible, leave approximately 3cm between the paddles or electrodes.

## Performance Improvement Suggestions

- Documentation of timeline: dispatch, patient contact, decision to transport, and termination of resuscitation (if applicable)

## Protocol C-12 – 2014 Ventricular Fibrillation/Tachycardia Pulseless, Adult

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Cardiac



# Hypertension



## History

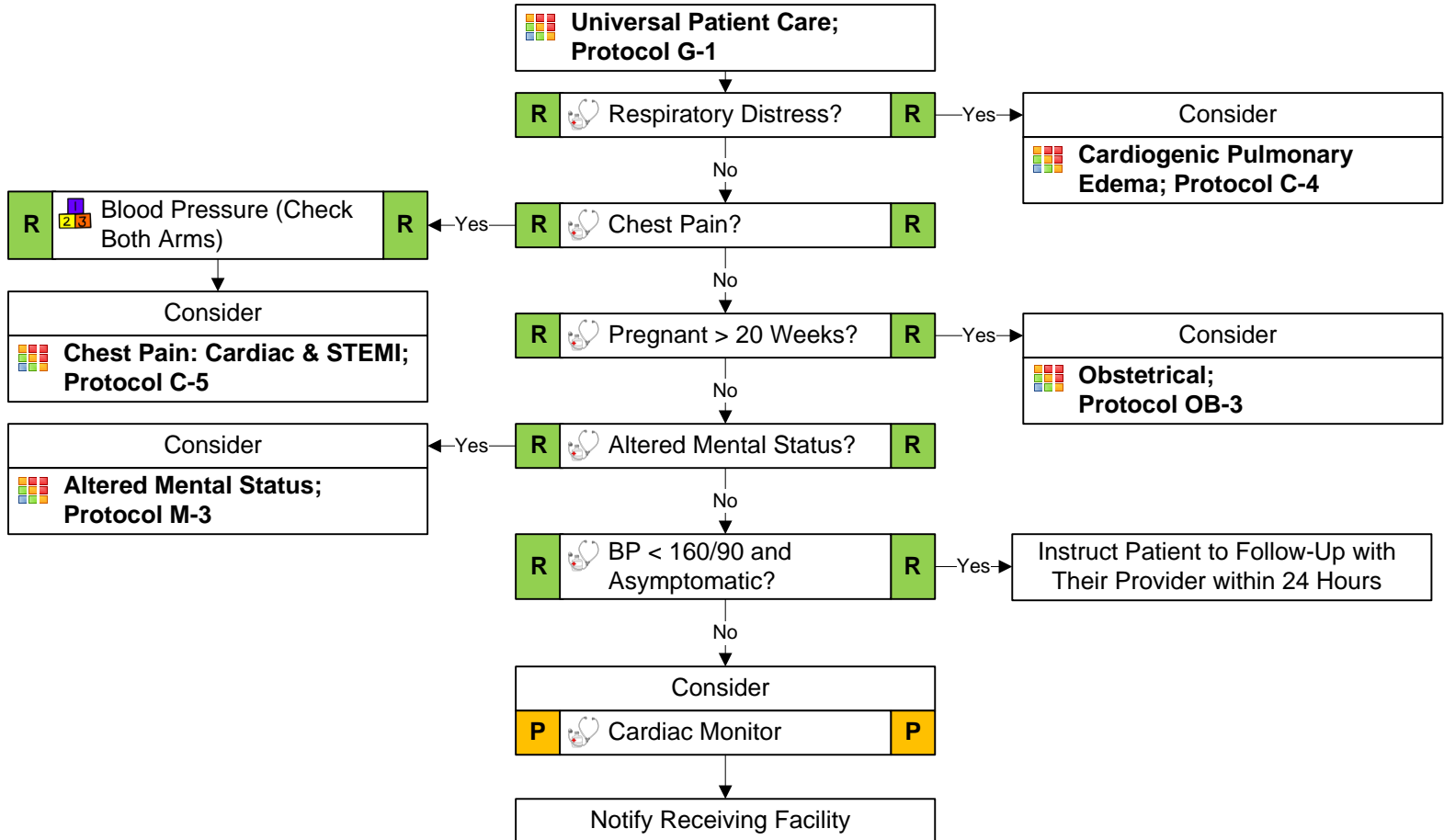
- Documented hypertension
- Related diseases:
  - Diabetes
  - CVA
  - Renal Failure
  - Cardiac disease
- Pacemaker
- Insecticide exposure
- Renal failure / dialysis

## Signs & Symptoms

- Headache
- Epistaxis
- Blurred vision
- Dizziness
- Confusion
- Chest pain
- Shortness of breath
- Focal neurological deficit

## Differential

- Hypertensive encephalopathy
- Primary CNS injury (Cushing's response = bradycardia with hypertension)
- Myocardial infarction
- Aortic dissection
- Pre-eclampsia / eclampsia
- Renal failure



## Pearls

- Symptomatic hypertension is typically revealed through end-organ damage to the cardiac, CNS, or renal systems (e.g. congestive heart failure, stroke, renal failure).
- Aortic dissection classically presents with the sudden onset of tearing chest pain that radiates to the back with unequal upper-extremity blood pressures.

## Performance Improvement Suggestions

- Documentation of blood pressure in both arms when chest pain is present
- Documentation of pregnancy status and gestation

## Protocol Ci-1 – 2014 Hypertension

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Circulatory

# Hypotension/Shock, Adult



## History

- Blood loss (vaginal / gastrointestinal bleeding / AAA / ectopic)
- Fluid loss (vomiting, diarrhea, fever)
- Infection
- Cardiac history (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- History of poor oral intake
- Trauma history
- Age

## Signs and Symptoms

- Restlessness, confusion
- Weakness, lightheadedness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Coffee-ground emesis
- Tarry stools
- Declining BP
- Decreased pulse pressure

## Differential

- Shock
  - Hypovolemic
  - Cardiogenic
  - Septic
  - Neurogenic
  - Anaphylactic
- Ectopic pregnancy
- Dysrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Medication effect / overdose
- Vasovagal
- Physiologic (pregnancy)



**Universal Patient Care;  
Protocol G-1**

**R** Position patient supine;  
Keep patient warm & dry **R**

**R** Supplemental Oxygen **R**

**Vascular Access;  
Protocol Ci-4**

Determine Cause

Trauma

Cardiac



**General Trauma, Adult;  
Protocol T-5**

**A** Normal Saline/LR  
fluid bolus 1L IV/IO  
May repeat x1 **E**

If Still Hypotensive after  
Fluid Bolus, Consider

**P** Dopamine  
5-20 mcg/kg/min IV **P**  
 Epinephrine  
2-10 mcg/min IV **P**

Treatment per appropriate  
**Cardiac Protocol**

No Rales Present?

**A** Normal Saline/LR fluid  
bolus (250-500 mL) **E**

Notify Receiving Facility

## Pearls

- Consider smaller fluid bolus (250-500 mL) in the elderly, who are at increased risk of tidal overload.
- Anaphylactic shock may not always present with rash or wheezing.
- Shock is defined as decreased end-organ perfusion; Hypotension is not required for the assessment of shock.
- Trendelenberg & leg elevation are ineffective treatments for shock.
- Treat shock with SHOCK:
- Secure the airway. Heat conservation. Oxygenate the blood. Core perfusion improvements. KeeP field time short.
- If shock is from hemorrhage target MAP of 70

## Performance Improvement Suggestions

- Patient assessment after each fluid bolus
- Documentation of lung sounds

## Protocol Ci-2 – 2014 Hypotension/Shock, Adult

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Circulatory

# Hypotension/Shock, Pediatric



## History

- Blood loss
- Fluid loss (vomiting, diarrhea, fever)
- Infection
- Cardiac history (Congenital, CHF)
- Medications
- Allergic reaction
- History of poor oral intake
- Trauma history
- Age

## Signs and Symptoms

- Restlessness, confusion
- Weakness, lightheadedness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed core capillary refill
- Declining BP
- Lethargy
- Flat/depressed Fontanels
- Decreased Blood Pressure

## Differential

- Trauma
- Infection
- Dehydration (Vomiting, Diarrhea, Fever)
- Congenital Heart Disease
- Medication or Toxin
- Allergic Reaction

**Universal Patient Care;  
Protocol G-1**

Position patient supine;  
Keep patient warm & dry

Supplemental Oxygen

**Vascular Access;  
Protocol Ci-4**

Determine Cause

Trauma

Cardiac

**General Trauma, Pediatrics;  
Protocol T-6**

Unknown

**Normal Saline  
fluid bolus 20ml/kg  
Max. 1L  
May repeat x1**

**Treatment per appropriate  
Cardiac Protocol**

No Rales Present?  
 **Normal Saline fluid  
bolus (250-500 mL)**

If Still Hypotensive after  
Fluid Bolus, Consider

	<b>Dopamine 5-20 mcg/kg/min IV</b>	
	<b>Epinephrine 2-10 mcg/min IV</b>	

Notify Receiving Facility

## Pearls

- Consider performing orthostatic vital signs on patients in non-trauma situations if suspected blood or fluid loss.
- Anaphylactic shock may not always present with rash or wheezing.
- Shock is defined as decreased end-organ perfusion; Hypotension is not required for the assessment of shock.
- Differentiate dizziness, is it vertigo or pre-syncope (lightheadedness)?
- Trendelenberg & leg elevation are ineffective treatments for shock.
- Treat shock with SHOCK:  
Secure the airway. Heat conservation. Oxygenate the blood. Core perfusion improvements. KeeP field time short.

## Performance Improvement Suggestions

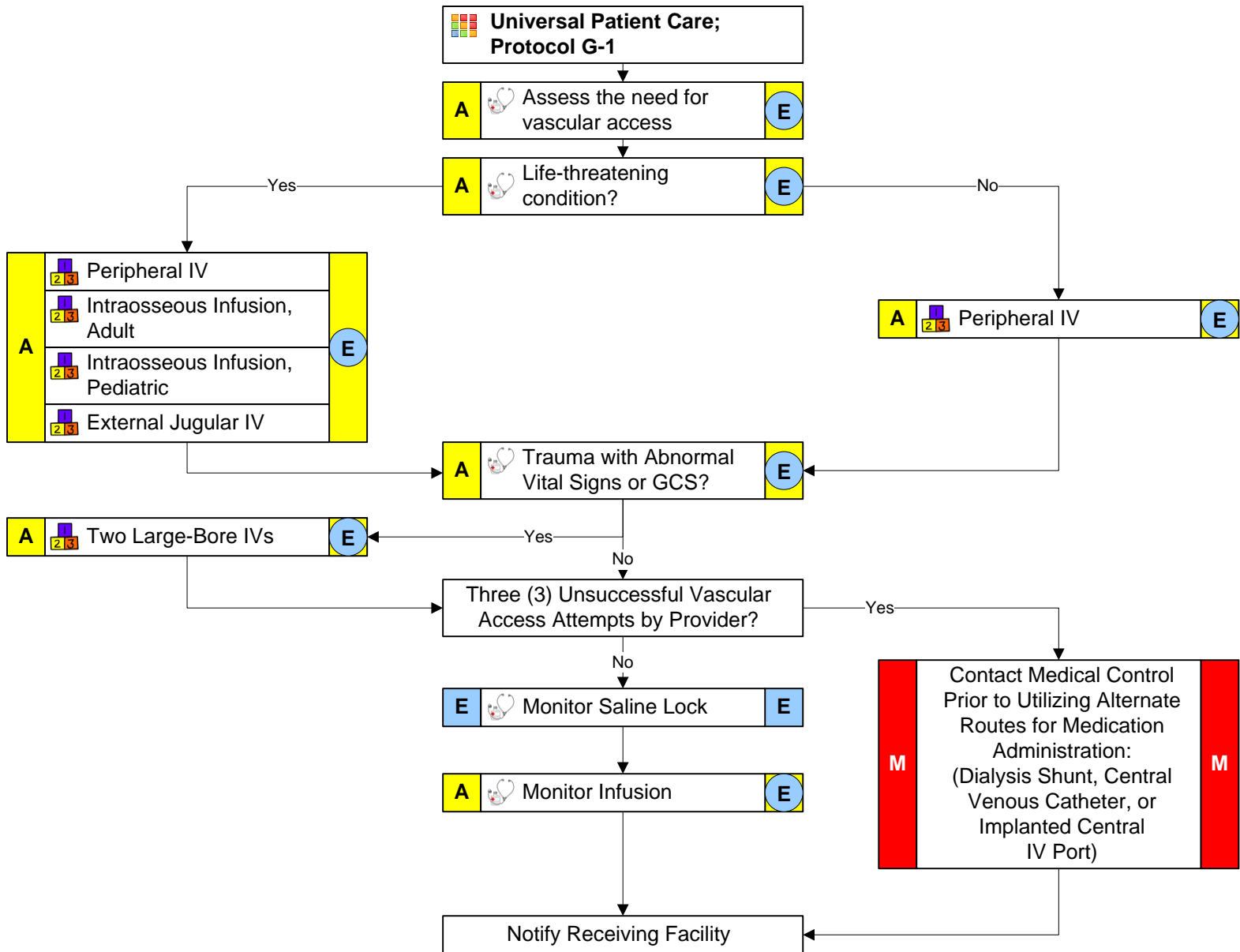
- Patient assessment after each fluid bolus
- Documentation of lung sounds

## Protocol Ci-3 – 2014 Hypotension/Shock, Pediatric

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Circulatory

# Vascular Access



## Pearls

- In the setting of cardiac arrest, any preexisting dialysis shunt or external central venous catheters may be used.
- Any prehospital fluids or medications approved for IV use may be given through an intraosseous (IO) infusion.
- All IV rates should be a KVO (minimal rate to keep the vein open) unless administering a fluid bolus.
- External jugular and IO lines may be attempted initially in life-threatening events where no obvious peripheral sites are noted.
- Any venous catheter that has already been accessed prior to EMS arrival may be used.
- Upper extremity IV sites are preferable to lower extremity sites.
- Lower extremity IV sites are discouraged in patients with vascular disease or diabetes.
- In post-mastectomy patients, avoid IV initiations, blood draws, injections, or taking a blood pressure in the arm on the affected side.

## Performance Improvement Suggestions

- Number of vascular access attempts and success rate

## Protocol Ci-4 – 2014 Vascular Access

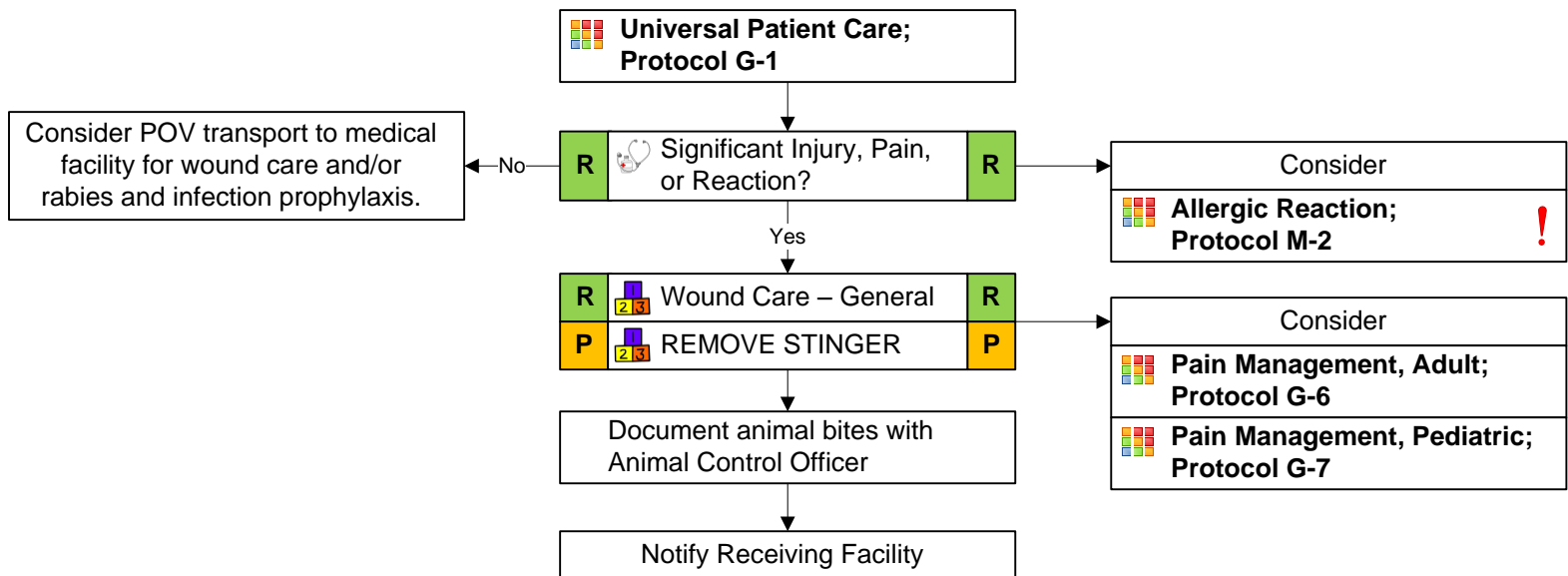
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Circulatory

# Bites & Envenomations



<b>History</b> <ul style="list-style-type: none"> <li>Type of bite or sting</li> <li>Bring description / photo of animal                             <ul style="list-style-type: none"> <li>The actual animal, dead or alive</li> </ul> </li> <li>Time, location, number, and size of bite(s) / sting(s)</li> <li>Previous reaction to bite / sting</li> <li>Domestic versus wild animal</li> <li>Tetanus and rabies risk</li> <li>Immunocompromised patient</li> </ul>	<b>Signs &amp; Symptoms</b> <ul style="list-style-type: none"> <li>Rash, skin break, wound</li> <li>Pain, soft tissue swelling, redness</li> <li>Bleeding</li> <li>Retained foreign body / stinger</li> <li>Evidence of infection</li> <li>Shortness of breath, wheezing</li> <li>Allergic reaction, hives, itching</li> <li>Hypotension / shock</li> </ul>	<b>Differential</b> <ul style="list-style-type: none"> <li>Animal bite</li> <li>Human bite</li> <li>Snake bite (poisonous)</li> <li>Spider bite (poisonous)</li> <li>Insect sting / bite</li> <li>Infection risk</li> <li>Rabies risk</li> <li>Tetanus risk</li> <li>Predetermined severe allergic reaction (bees)</li> </ul>
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## Pearls

- Bites from humans have higher infection rates than bites from animals due to normal bacteria in the human mouth; they will require antibiotics for infection prophylaxis. Ambulance transport is not necessarily required.
- In Idaho, bats are the most common carrier of rabies. If the patient awakes to find a bat in their bedroom, rabies prophylaxis is indicated, even in the absence of a bite. Likewise, incidental contact with a bat (e.g. children playing with a bat carcass) will also require rabies prophylaxis.
- In Idaho, the rattlesnake pit viper is the most common poisonous snake. However, exotic snakes are sometimes kept as pets.
  - Do not apply suction or electricity as first aid for snakebites.
  - Do not incise the wound.
  - The amount of envenomation is variable; it is generally worse with larger snakes and bites in early spring.
  - If the patient experiences no pain or swelling, envenomation is unlikely.
- In the absence of systemic symptoms, spider bites do not warrant emergency transportation. Note that some spider bites may delay presentation of systemic symptoms. Black widow bites tend to cause minimal pain but, over a few hours, can cause muscular pain and/or severe abdominal pain.

## Performance Improvement Suggestions

- Documentation of previous allergic reaction(s) to bites or stings
- Documentation of contact with animal control entities

## Protocol E-1 – 2014 Bites & Envenomations

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Environmental

# Chempack



## History

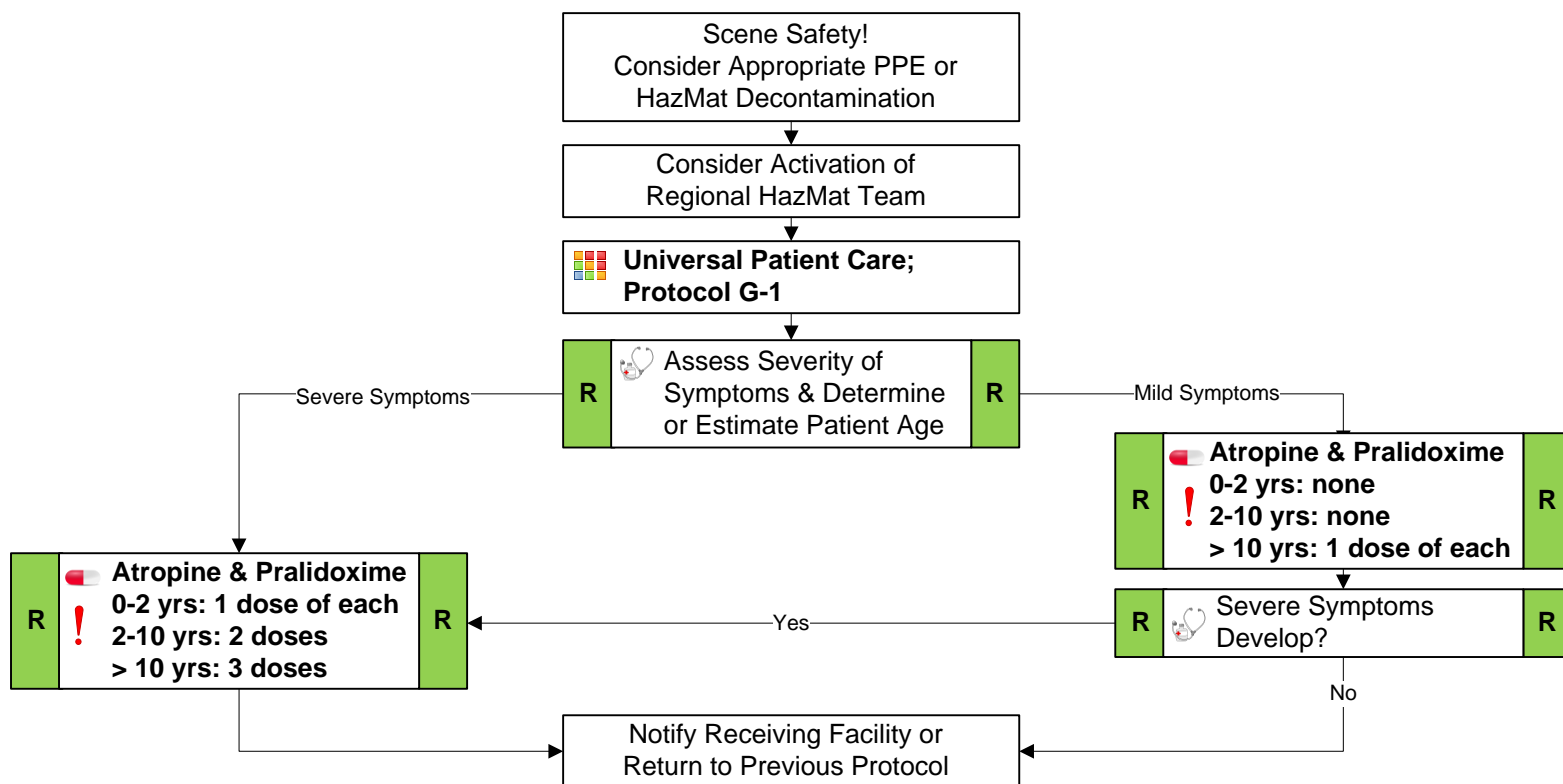
- An unexplained multi-casualty incident (MCI)
- Symptoms of nerve agent toxicity or organophosphate poisoning

## Mild Signs & Symptoms

- Blurred vision, miosis (pinpoint pupils)
- Excessive, unexplained teary eyes
- Excessive, unexplained rhinitis
- Increased salivation / sudden drooling
- Chest tightness or dyspnea
- Tremors / muscular twitching throughout the body
- Nausea / vomiting
- Unexplained wheezing, coughing, or increased airway secretions
- Acute onset of stomach cramps
- Tachycardia or bradycardia

## Severe Signs & Symptoms

- Strange or confused behavior
- Severe difficulty breathing or copious amount of secretions from lungs / airway
- Severe muscular twitching and general weakness
- Involuntary urination / defecation
- Convulsions
- Unexplained unconsciousness



## Pearls

- If more than one dose of a MARK1 Kit or DuoDote are needed, give doses in rapid succession.
- At an MCI event, label the patient's forehead to indicate if they have received a MARK 1 Kit or DuoDote by writing "Mark 1" or "DuoDote" as appropriate. Indicate the number of doses and the time(s) of administration as well. If using triage tags, document the information on the tag.
- Auto-inject the lateral side of the patient's thigh, midway between the waist and the knee. Massage the injection site for several seconds.
- The auto-injector may inject through clothing; be careful to NOT hit buttons, zippers, etc. Make sure the patient's pockets are empty.
- Push the needle of the used auto-injector against a hard surface to bend the needle back against the auto-injector.
- Safely store and dispose of the used auto-injector (e.g. biohazard / sharps container).
- If the patient is potentially contaminated, contact the receiving facility to prepare them for possible decontamination.
- Each Chempack Kit contains 600mg Pralidoxime (2-PAM) and 2mg Atropine.

## Performance Improvement Suggestions

- Documentation of symptom severity
- Assessment of scene safety

## Protocol E-2 – 2014 Chempack Protocol

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Environmental

# Environmental Hyperthermia



## History

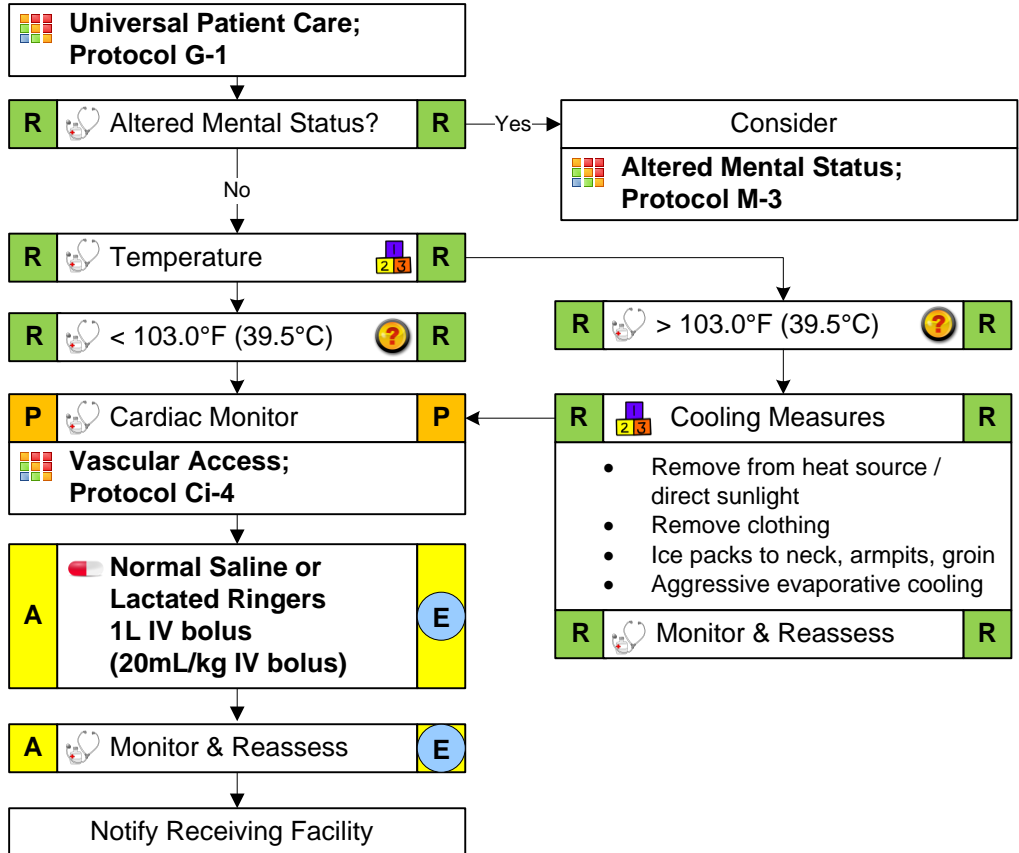
- Past medical history
- Medications
- Age
- Exposure to increased temperatures and / or humidity
- Time and length of exposure
- Extreme exertion
- Poor oral intake
- Fatigue

## Signs & Symptoms

- Altered mental status
- Unconsciousness
- Hot and dry or sweaty skin
- Hypotension / shock
- Seizures
- Nausea / vomiting

## Differential

- Heat cramps
- Heat exhaustion / stroke
- Agitated delirium
- Neuroleptic malignant syndrome
- Serotonin syndrome
- Thyrotoxicosis
- Delirium tremens
- Lesions / tumors of the central nervous system



## Pearls

- Patients in extremes of age are more prone to heat-related emergencies.
- If the patient has had no environmental exposure, consider other causes such as infection (Fever / Infection Control; Protocol M-7).
- Hyponatremia can also mimic a heat emergency.
- Heat Cramps:
  - Consist of benign muscle cramping secondary to dehydration
  - Not associated with an elevated temperature
- Heat Exhaustion:
  - Consists of dehydration, salt depletion, dizziness, fever, headache, cramping, nausea, and vomiting
  - Indicative vital signs may include tachycardia, hypotension, and an elevated temperature
- Heat Stroke:
  - Consists of an altered mental status
  - Indicative vital signs may include tachycardia, hypotension, and a temperature > 104°F (39.5°C)

## Performance Improvement Suggestions

- Documentation of effective cooling measures used, especially evaporative cooling
- Documentation of temperature trending

## Protocol E-3 – 2014 Environmental Hyperthermia

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# Hypothermia



## History

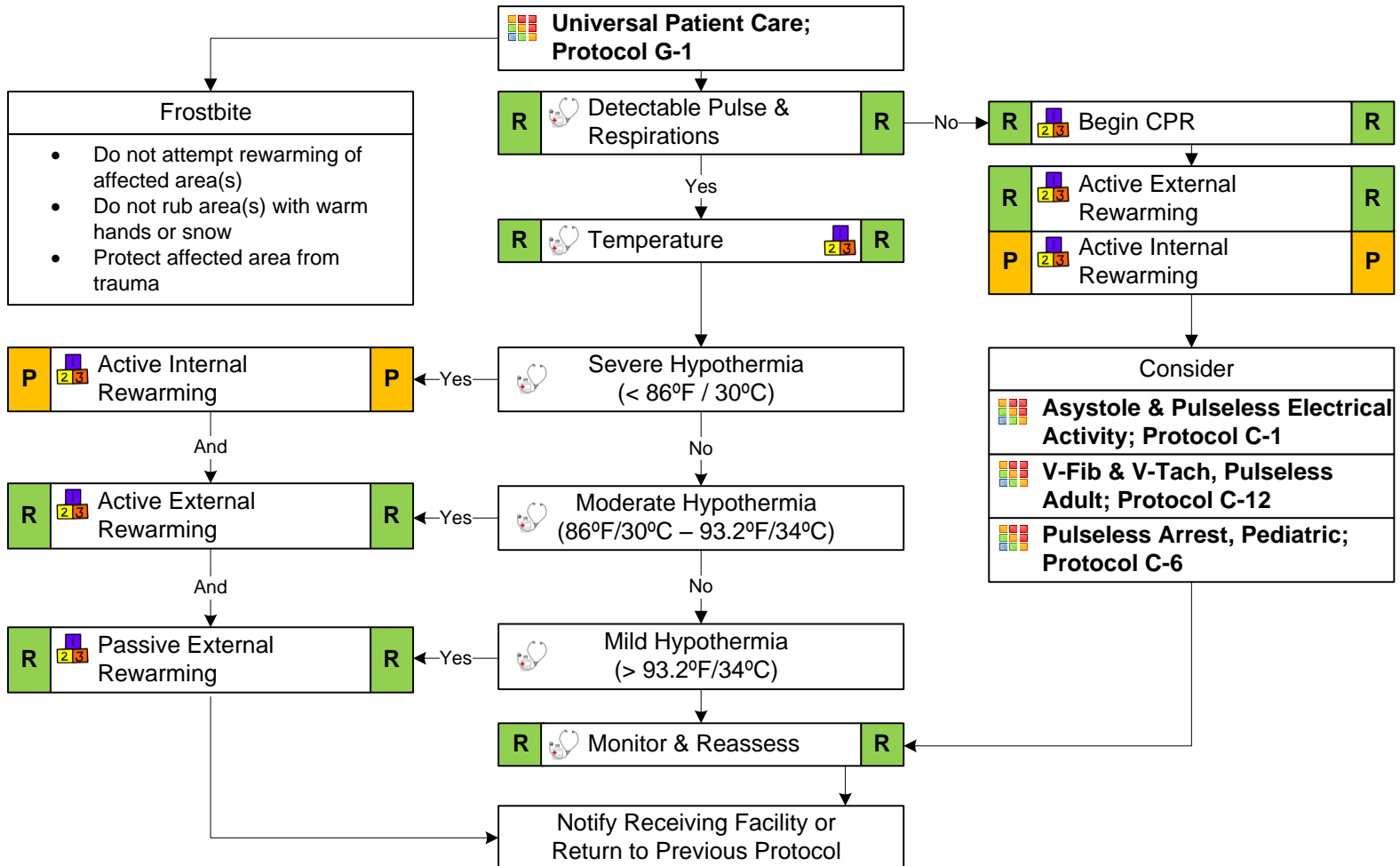
- Past medical history
- Medications
- History of diabetes or thyroid disorder
- Exposure to extreme cold and recent environment (even in normal temperatures)
- Duration of exposure
- Drug / alcohol use

## Signs & Symptoms

- Mild ( $> 93.2^{\circ}\text{F} / 34^{\circ}\text{C}$ ):
  - Shivering
- Moderate ( $86^{\circ}\text{F} / 30^{\circ}\text{C} - 93.2^{\circ}\text{F}$ ):
  - Confusion / stupor / apathy
  - Paradoxical undressing
  - Ataxia
- Severe ( $< 86^{\circ}\text{F} / 30^{\circ}\text{C}$ ):
  - Comatose
  - Bradycardia
  - Prominent J wave (Osborn)

## Differential

- Sepsis
- Environmental exposure
- Hypoglycemia
- Myxedema coma
- Stroke
- Head / spinal cord injury



## Pearls

- NO PATIENT IS DEAD UNTIL THEY ARE WARM AND DEAD! Termination of resuscitation should not be considered if the patient's temperature is below  $93^{\circ}\text{F}$  ( $33.9^{\circ}\text{C}$ ).
- Cardiac irritability is increased with severe hypothermia and it may result in ventricular fibrillation. Be sure to handle these patients gently during repositioning, transfers, and intubation.
- Hypothermia may produce severe bradycardia – be sure to take at least 45 seconds to palpate for a pulse; in severe hypothermia, a patient may appear clinically dead.
- Standard ACLS protocol should be followed concurrent with re-warming efforts. Although ACLS may be less effective with patients suffering from severe hypothermia, do not delay ACLS drugs or repeat defibrillation until a certain temperature is reached.
- If available, hot packs should be placed in the armpits and groin – do not place heat packs directly against the patient's skin.

## Performance Improvement Suggestions

- Documentation of measures taken for patient rewarming

## Protocol E-4 – 2014 Hypothermia

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Environmental

# Near Drowning



## History

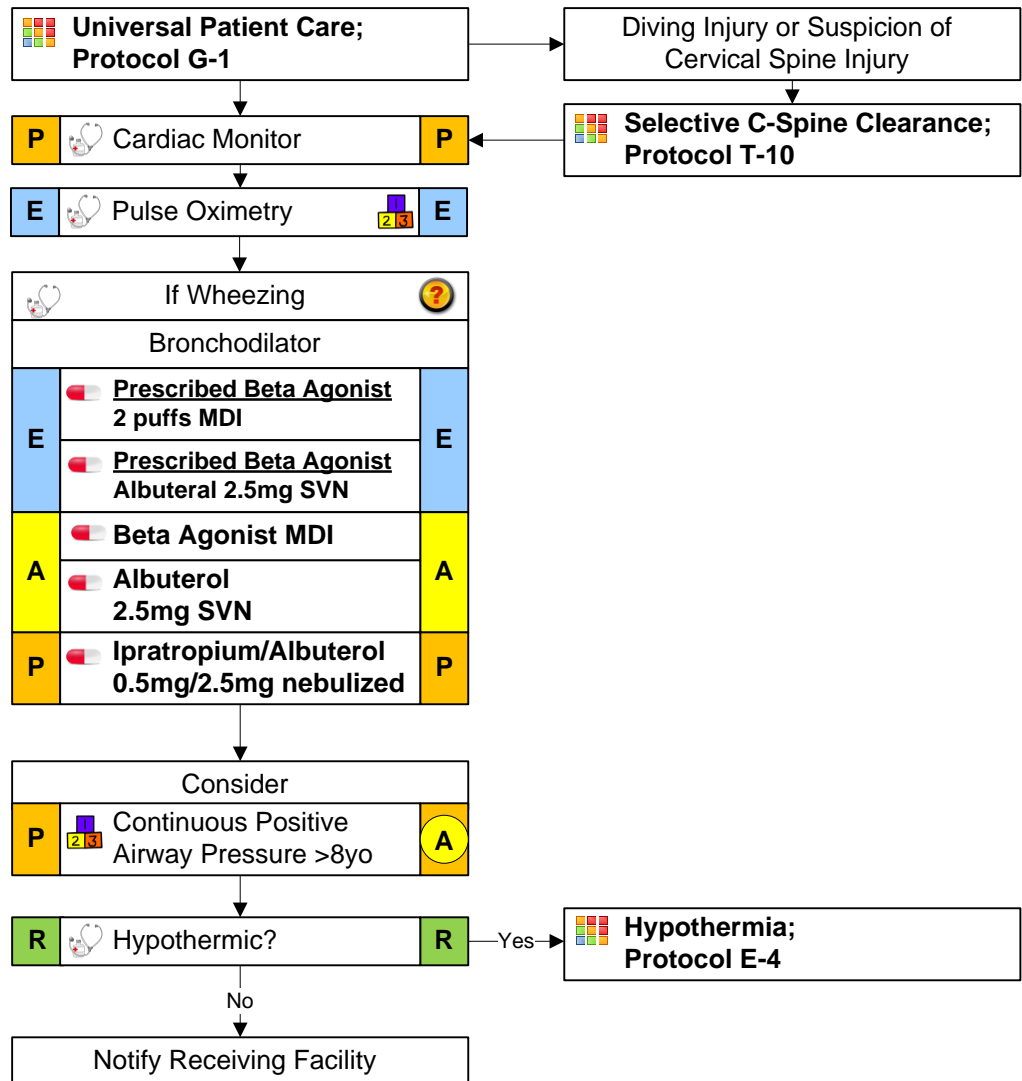
- Submersion in water (regardless of depth)
- Possible trauma to c-spine
- Possible mechanism of trauma:
  - Diving board
  - Underwater rocks
- Duration of immersion
- Temperature of water
- Age

## Signs & Symptoms

- Unresponsive
- Change in mental status
- Decreased or absent vital signs
- Vomiting
- Coughing
- Apnea
- Stridor
- Wheezing
- Rales

## Differential

- Trauma
- Intoxication
- Barotrauma
- Decompression sickness
- Post-immersion syndrome
- Hypothermia



## Pearls

- Have a high index of suspicion for possible spinal injuries.
- In Idaho, all natural bodies of water are considered cold water.
- Survival after 1 hour of immersion in cold water is rare; consider transitioning from rescue to recovery.
- Respiratory distress may be delayed; therefore, all near drowning patients should be transported for evaluation.
- Decompression illness may require hyperbaric therapy.

## Performance Improvement Suggestions

- Documentation of immersion time
- Documentation of immersion mechanism

## Protocol E-5 – 2014 Near Drowning

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Environmental

# Toxic Inhalation



## History

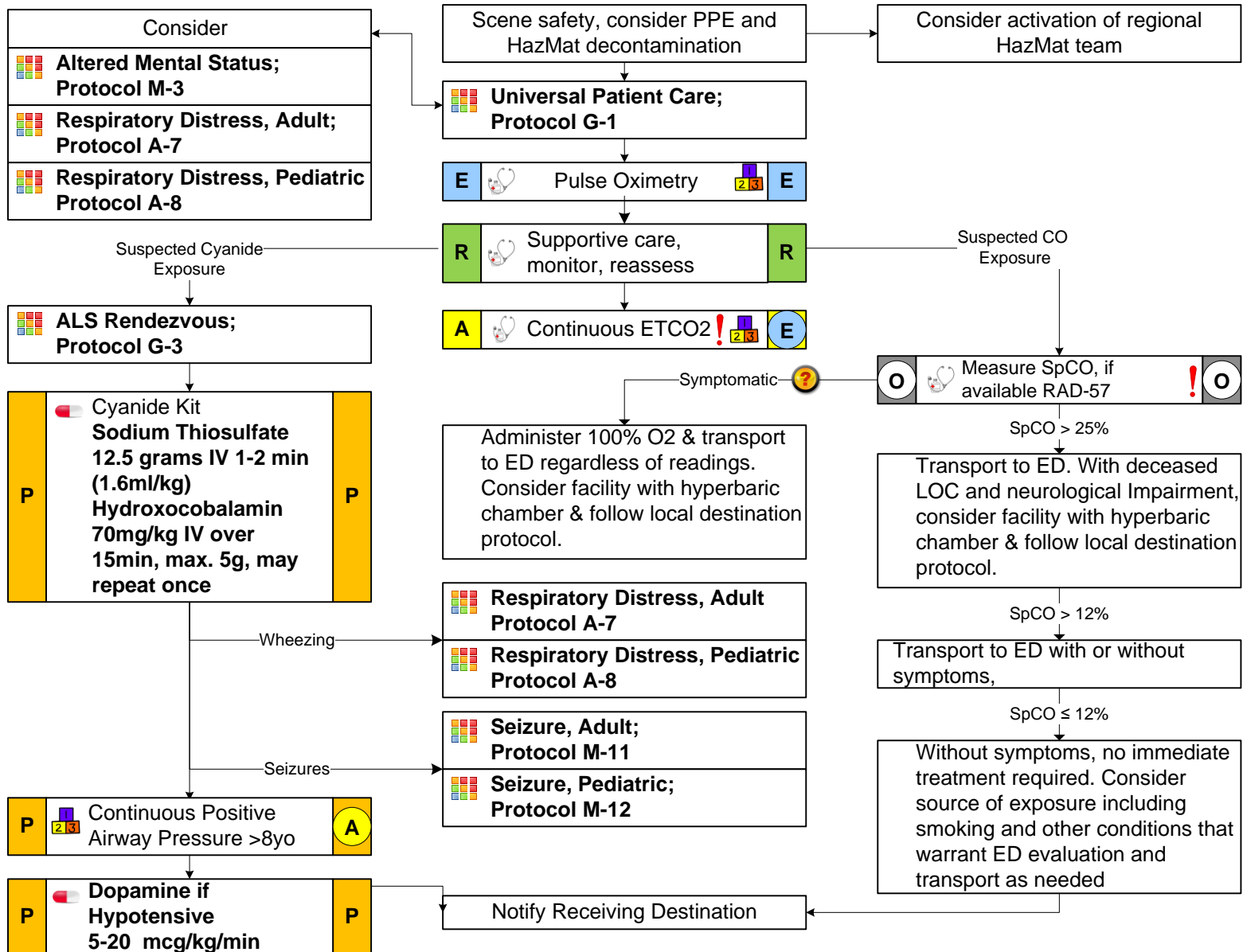
- Intentional use of inhalants: paint, amyl nitrate, huffing
- Carbon Monoxide exposure
- Toxic exposure
- Smoke inhalation
- CS spray Asthma; COPD – chronic bronchitis, emphysema, congestive heart failure

## Signs and Symptoms

- Shortness of breath, wheezing, rhonchi
- Pursed lip breathing
- Decreased ability to speak, voice changes
- Increased respiratory rate and effort
- Use of accessory muscles
- Cough
- Tachycardia
- “SLUDGE” signs
- Face, Mouth burns

## Differential

- Asthma, Anaphylaxis, Aspiration
- MI, CHF, COPD, Pneumonia, PE
- Pleural effusion
- Pneumo, pericardial tamponade
- Inhaled toxin, Cyanide
- Inhaled smoke, w/ burns
- CO Exposure
- HAZMAT
- Intentional inhalation



## Pearls

- Pulse oximetry monitors may give falsely normal readings in patients who have been exposed to CO.

## Performance Improvement Suggestions

- Documentation of exposure history
- Documentation of vital signs and mental status prior to administration of medications

## Protocol E-6 – 2014 Toxic Inhalation

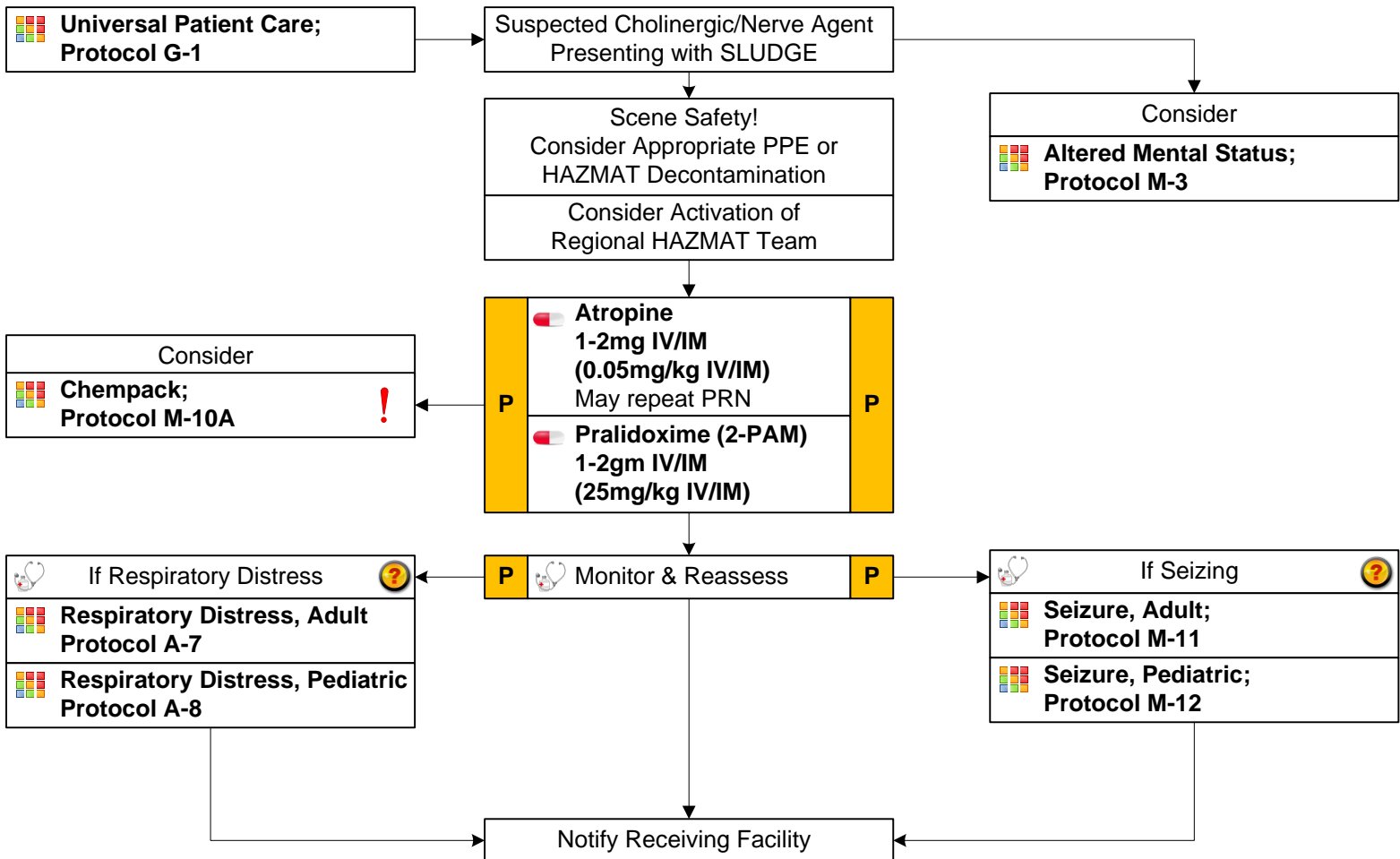
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Environmental

# Weapons of Mass Destruction: Nerve Agent



<b>History</b> <ul style="list-style-type: none"> <li>Exposure to chemical, biologic, radiologic, or nuclear hazard(s)</li> <li>Potential exposure to unknown substance(s) / hazard(s)</li> </ul>	<b>Signs &amp; Symptoms</b> <ul style="list-style-type: none"> <li>Visual disturbances, headache</li> <li>Diaphoresis</li> <li>Seizures</li> <li>Respiratory distress / arrest</li> <li>SLUDGE: <ul style="list-style-type: none"> <li>Salivation</li> <li>Lacrimation (tears)</li> <li>Urination</li> <li>Defecation</li> <li>Gastrointestinal upset</li> <li>Emesis</li> </ul> </li> </ul>	<b>Differential</b> <ul style="list-style-type: none"> <li>Nerve agent exposure: Sarin, Soman, VX, etc.</li> <li>Organophosphate (pesticide) exposure</li> <li>Vesicant exposure: mustard gas, etc.</li> <li>Respiratory irritant exposure: Hydrogen Sulfide, ammonia, chlorine, etc.</li> </ul>
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## Pearls

- Follow local HAZMAT protocols for decontamination and use of personal protective equipment.
- Identification of the causal agent by the regional HAZMAT team may be delayed; initiate treatment based upon the patient's symptoms.
- For patients with severe SLUDGE symptoms, there is no limit for Atropine dosing; Atropine should be given until salivation improves.
- Each Chempack kit contains 600mg Pralidoxime (2-PAM) and 2mg of Atropine.

## Performance Improvement Suggestions

- Documentation of decontamination procedures
- Documentation of SLUDGE symptom severity

## Protocol E-7 – 2014 Weapons of Mass Destruction: Nerve Agent

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Environmental

# Abdominal Pain



## History

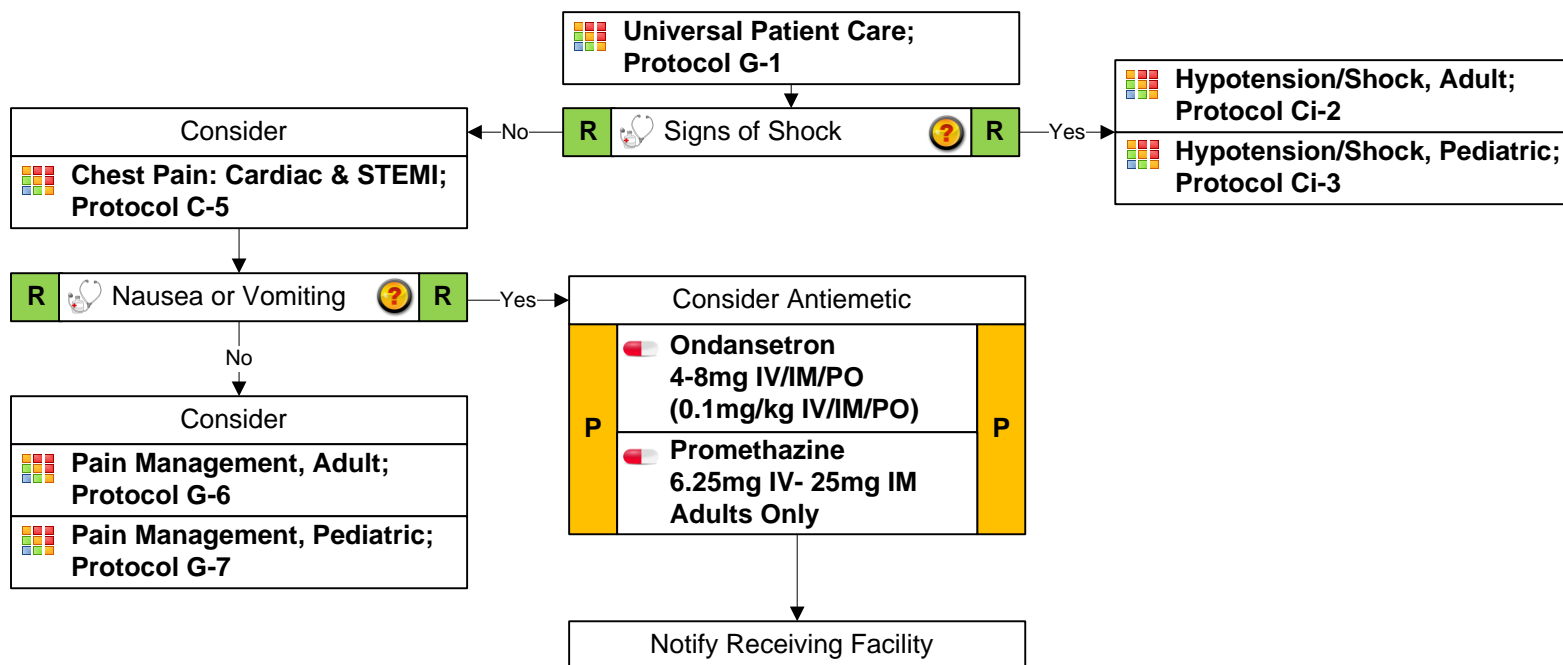
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain / injury
- Palliation / provocation
- Quality (constant, sharp, dull, etc.)
- Region / radiation / referred
- Severity (pain scale)
- Time (duration, repetition)
- Fever
- Last meal eaten
- Last bowel movement / emesis
- Menstrual history (pregnancy)

## Signs & Symptoms

- Pain (location / migration)
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Dysuria
- Constipation
- Vaginal bleeding / discharge
- Pregnancy

## Differential

- Pneumonia or pulmonary embolus
- Liver (hepatitis, CHF)
- Peptic ulcer disease / gastritis
- Cholecystitis (gall bladder)
- Myocardial infarction
- Pancreatitis
- Kidney stones
- Abdominal aneurysm
- Appendicitis
- Bladder / prostate disorder
- Pelvic (PID, ectopic pregnancy, ovarian cyst, etc.)
- Splenomegaly
- Diverticulitis
- Bowel obstruction
- Gastroenteritis (infectious)



## Pearls

- Abdominal pain in female patients of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- An abdominal aneurysm should be considered in patients over 50 years of age complaining of abdominal pain.
- Ondansetron (Zofran) is the primary medication for the treatment of nausea. Promethazine (Phenergan) may result in excessive sedation and may cause soft tissue necrosis when given via IV.

## Performance Improvement Suggestions

- Documentation of vital signs and mental status prior to administration of anti-emetics

## Protocol M-1 – 2014 Abdominal Pain

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Medical

# Allergic Reaction



## History

- Onset and location of reaction
- Insect sting or bite
- Food allergy / exposure
- Medication allergy / exposure
- New clothing, soap, detergent, etc
- Past history of reactions
- Past medical history
- Any medications recently taken (Benadryl, Epi-Pen, etc)

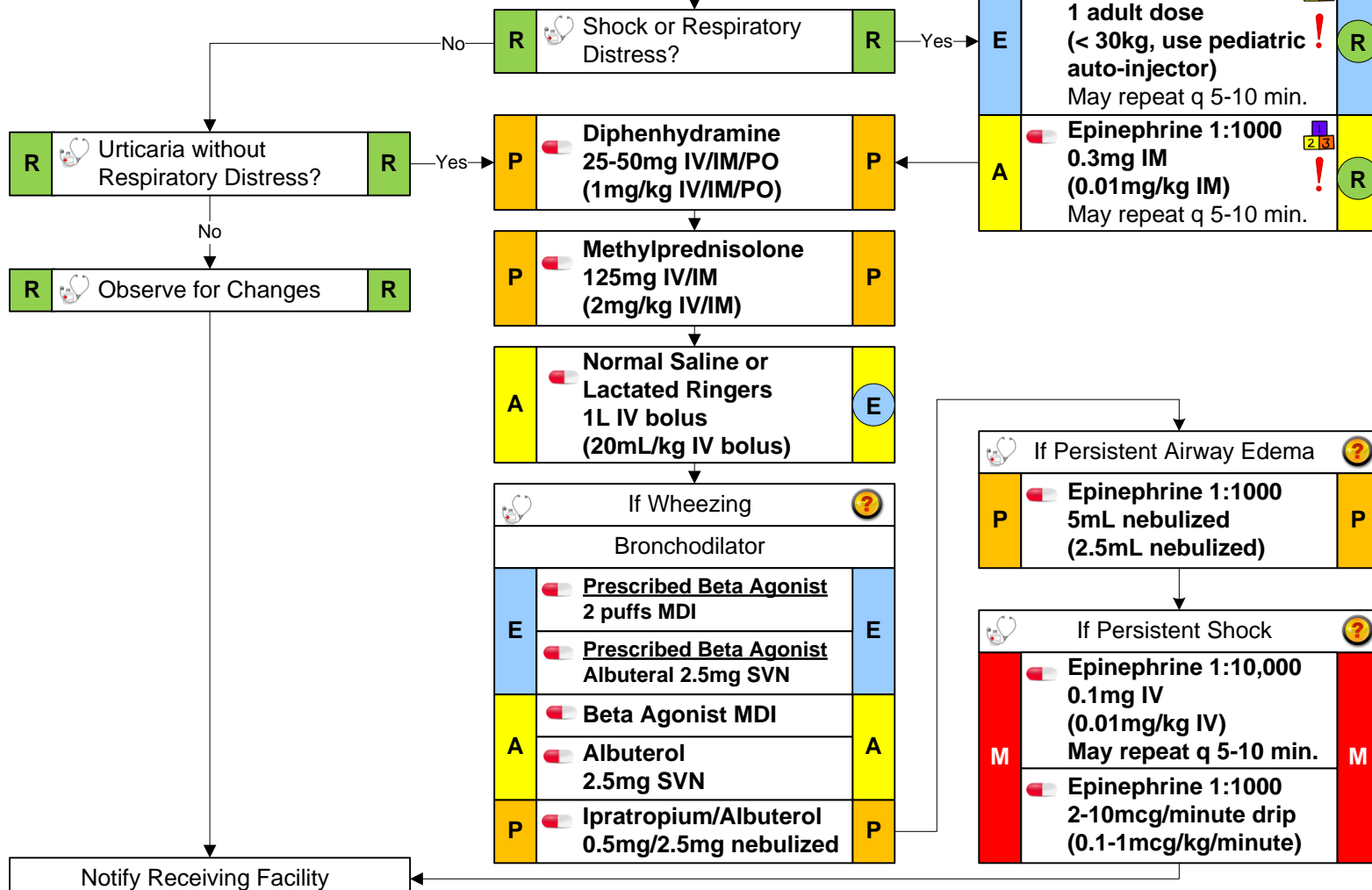
## Signs & Symptoms

- Itching or hives
- Coughing, wheezing, or respiratory distress
- Chest or throat constriction
- Difficulty swallowing (dysphagia)
- Hypotension or shock
- Edema
- Rate of onset of symptoms
- Nausea, vomiting, GI upset

## Differential

- Urticaria (rash / hives)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug-induced)
- Aspiration / airway obstruction
- Vasovagal event
- Asthma or COPD
- Congestive heart failure

## Universal Patient Care; Protocol G-1



## Pearls

- Anaphylaxis can occur without wheezes or rash.
- The lateral aspect of the thigh is the preferred site for IM epinephrine and the auto-injector.
- IV access should not delay the administration of IM epinephrine.
- Epinephrine is the primary treatment for anaphylaxis / allergic reactions.
- Patients who receive epinephrine that are over the age of 50 or have a history of heart disease need a 12-lead EKG and should be monitored for cardiac ischemia.

## Performance Improvement Suggestions

- Failure to administer epinephrine
- Documentation of oropharyngeal swelling

## Protocol M-2 – 2014 Allergic Reaction

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# Altered Mental Status



## History

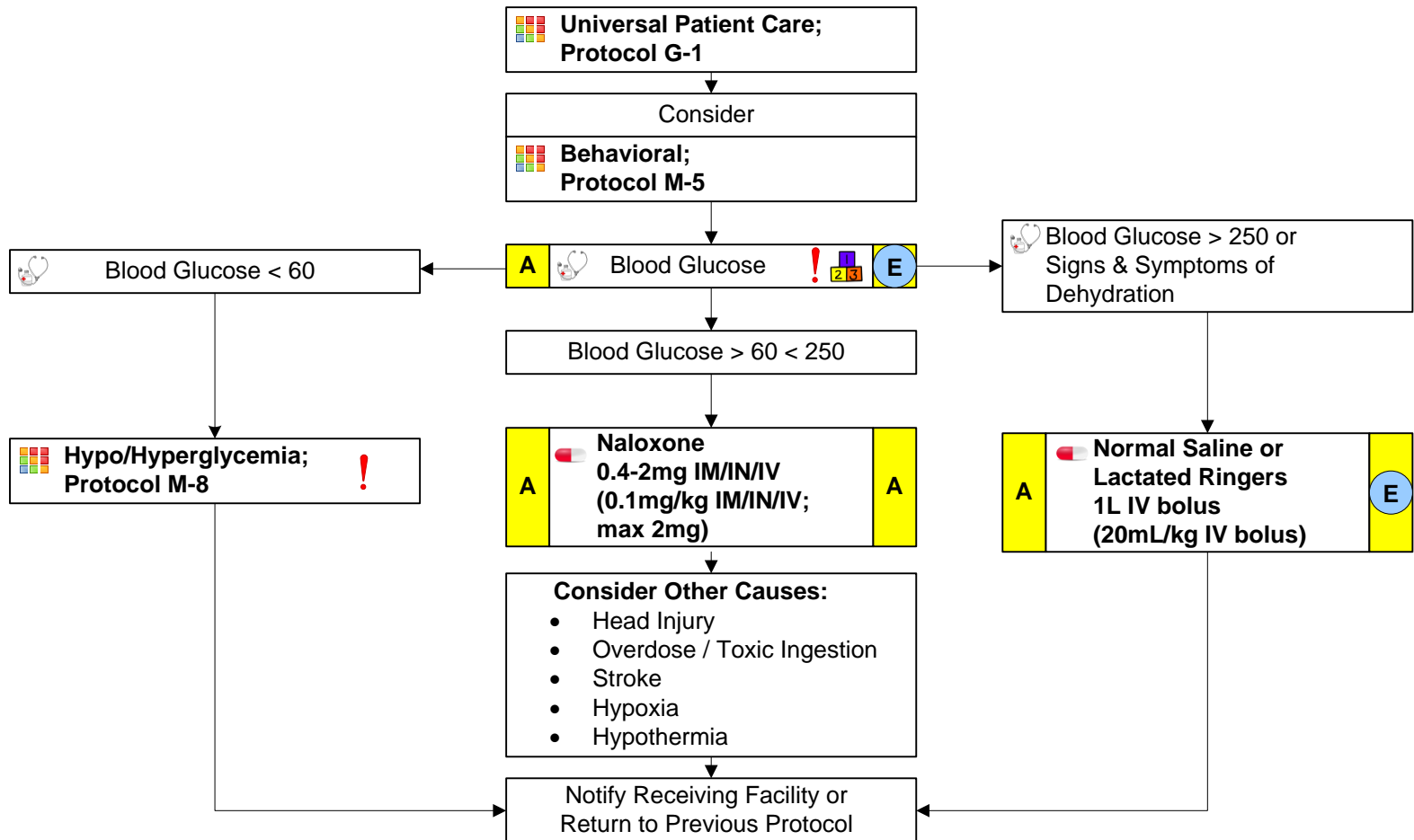
- Known diabetic (medical alert tag)
- Drugs or drug paraphernalia
- Evidence of drug or alcohol use or toxin ingestion
- Past medical history
- Medications
- History of trauma
- Changes in feeding / sleeping habits

## Signs & Symptoms

- Decreased mental status or lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin; fruity breath; signs of dehydration; Kussmaul respirations)
- Irritability

## Differential

- A: allergies, alcohol, anoxia
- E: epilepsy, endocrine, environmental exposure
- I: infection
- O: overdose, opiates
- U: uremia
- T: trauma
- I: insulin-dependent diabetes mellitus
- P: psychosis, psychiatric, pulmonary
- S: sepsis, stroke, subarachnoid hemorrhage, space-occupying lesion



## Pearls

- If unable to obtain blood glucometry, treat the altered mental status as hypoglycemia.
- Be aware that an altered mental status may present with signs of an environmental toxin or a hazardous material exposure.
- Never assume the patient is merely intoxicated; alcoholics often develop hypoglycemia and may have unrecognized injuries.
- Consider restraints if it is necessary to secure the protection of the patient and/or EMS personnel.
- Naloxone (Narcan) should be carefully titrated to reverse respiratory depression without inducing agitation or withdrawal.
- Consider the patient's core temperature; hypothermia and hyperthermia may present with an altered mental status.

## Performance Improvement Suggestions

- Documentation of respiratory rate and response to intervention
- Documentation of blood glucose

## Protocol M-3 – 2014 Altered Mental Status

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Medical



# Back Pain



## History

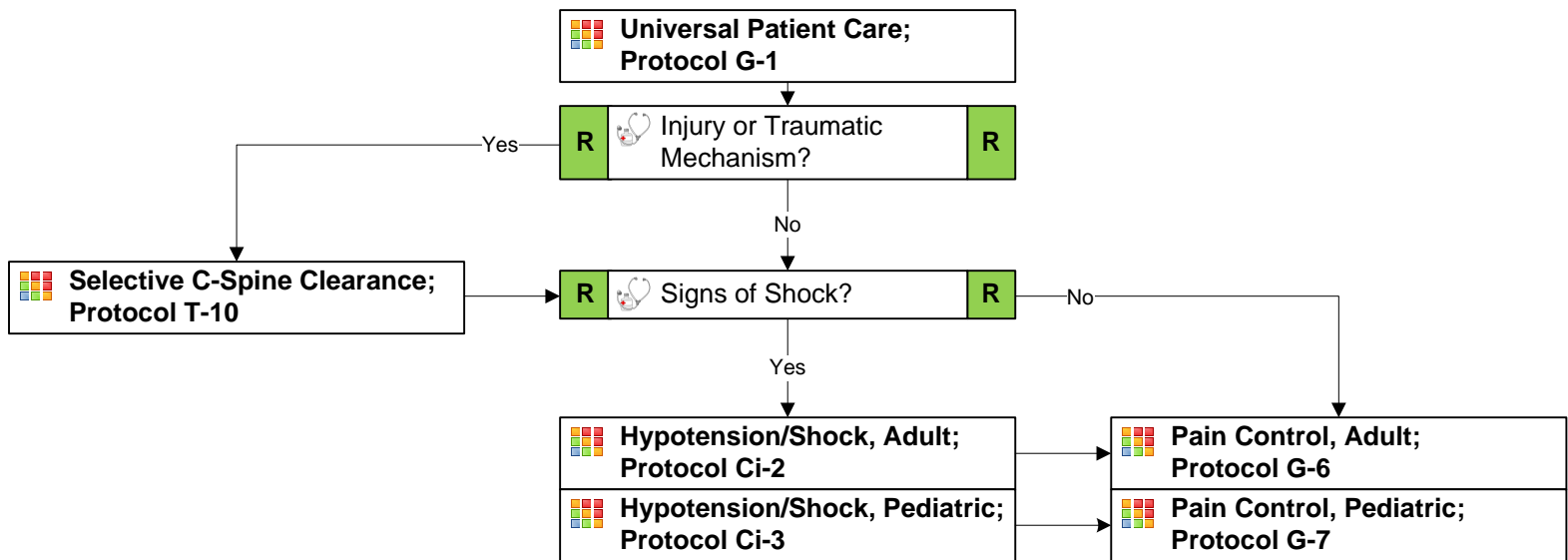
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain / injury
- Previous back injury
- Traumatic mechanism
- Location of pain
- Fever
- Improvement or worsening with activity
- History of IV drug abuse

## Signs & Symptoms

- Pain (paraspinous, spinous process)
- Swelling
- Pain with range of motion
- Extremity weakness
- Extremity numbness
- Bowel / bladder dysfunction
- Shooting pain into an extremity

## Differential

- Muscle spasm / strain
- Herniated disc with nerve compression
- Sciatica
- Spine fracture
- Kidney stone(s)
- Pyelonephritis
- Aneurysm
- Pneumonia
- Spinal epidural abscess
- Metastatic cancer



## Pearls

- Abnormal aneurysms are a concern in patients over the age of 50.
- Kidney stones typically present with an acute onset of flank pain that radiates forward to the groin area.
- Patients with midline pain over the spinous processes should be evaluated for spinally immobilizing. (Protocol T-10)
- Any bowel or bladder incontinence is a significant finding and requires immediate medical evaluation.
- In patients with a history of IV drug abuse, a spinal epidural abscess should be considered.

## Performance Improvement Suggestions

- Documentation of the response to fluid bolus/challenge (if given)
- Documentation of the consideration for spinal immobilization in a trauma setting

## Protocol M-4 – 2014 Back Pain

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Medical

# Behavioral



## History

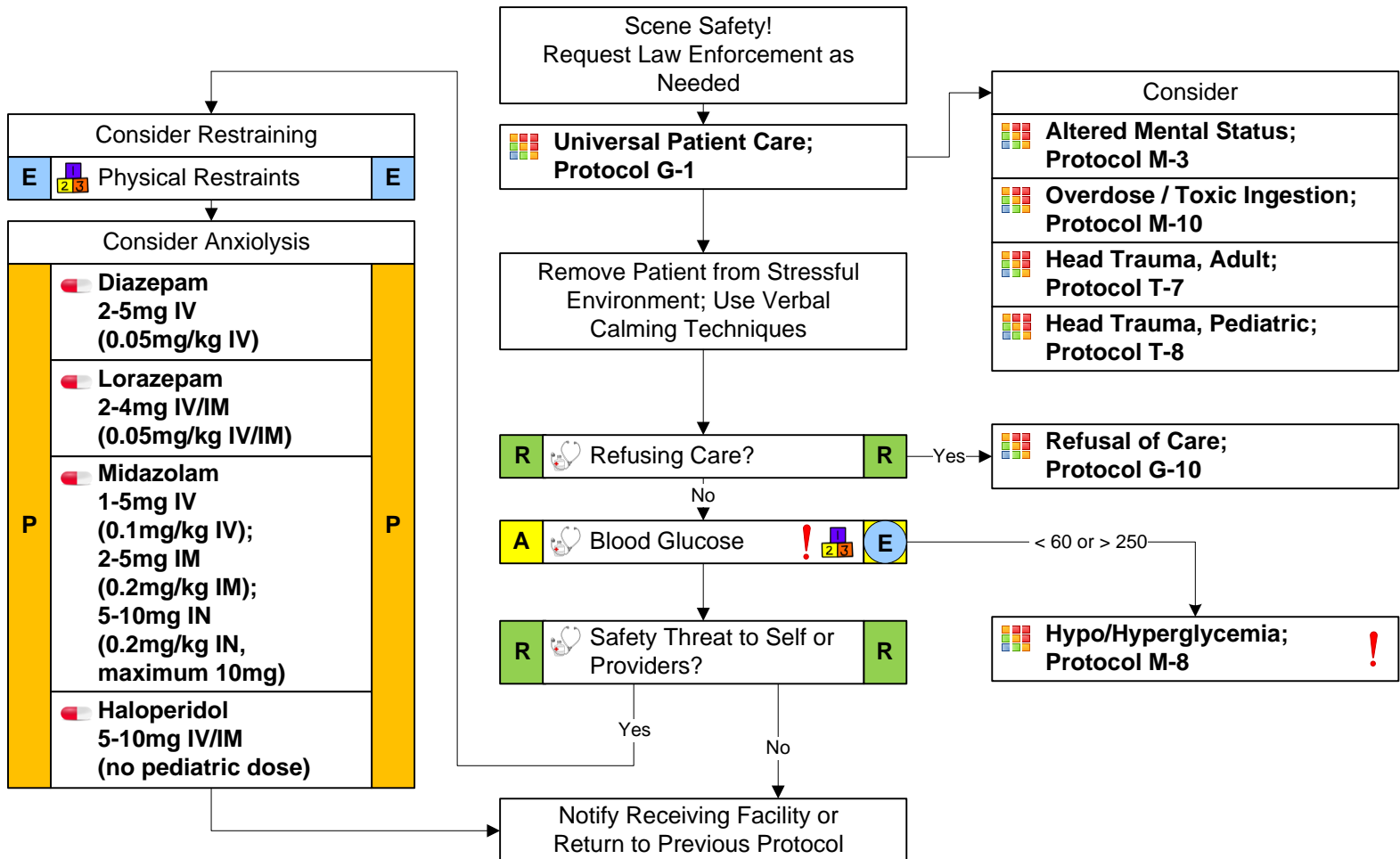
- Situational crisis
- Psychiatric illness / medications
- Injury to self or threats to others
- Medic alert tag
- Substance abuse / overdose
- Diabetes

## Signs & Symptoms

- Anxiety, agitation, confusion
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative, violent
- Expression of suicidal / homicidal thoughts

## Differential

- Excited delirium
- Alcohol intoxication
- Toxin / substance abuse
- Medication effect / overdose
- Withdrawal syndromes
- Depression
- Bipolar (manic-depressive)
- Schizophrenia
- Anxiety Disorders



## Pearls

- Your safety comes first! Have law enforcement search and clear patients who pose a threat. Be aware of hidden weapons.
- Be sure to consider all possible medical / trauma causes for behavior (hypoglycemia, overdose, substance abuse, hypoxia, head injury, etc.).
- Do not irritate the patient with a prolonged exam.
- Do not overlook the possibility of associated domestic violence or child abuse.
- If patients with suspected excited delirium suffer cardiac arrest, consider a fluid bolus and sodium bicarbonate early.
- All patients who are handcuffed or restrained by law enforcement and transported by EMS must be accompanied by law enforcement in the ambulance.
- Do not position or transport any restrained patients in such a way that could impact their respiratory or circulatory status.
- Limit IN medications to 1mL per nostril. If more than 2mL is required, additional medications may be given IN after 10 minutes.

## Performance Improvement Suggestions

- Documentation of the indication for physical or chemical restraint

## Protocol M-5 – 2014 Behavioral

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Medical

# Epistaxis



## History

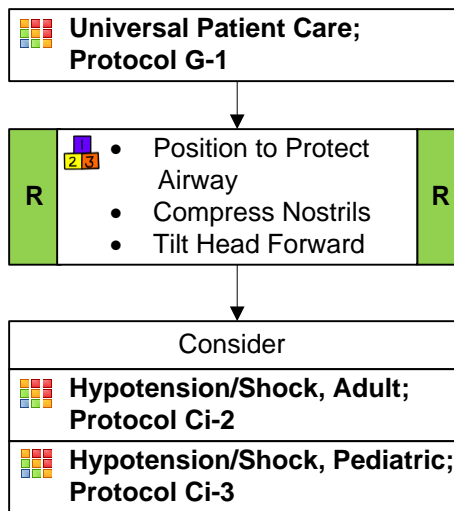
- Age
- Past medical history
- Medications
  - Anticoagulants
  - Aspirin
  - Clopidogrel
  - NSAIDs
- Previous episode of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding

## Signs & Symptoms

- Bleeding from nasal passage(s)
- Pain
- Nausea / vomiting
- Dyspnea / respiratory distress

## Differential

- Trauma
- Infection (viral upper-respiratory tract infection or sinusitis)
- Allergic rhinitis
- Lesions (polyps, ulcers, tumors)
- Hypertension



## Pearls

- Instruct the patient to not swallow blood; swallowed blood may cause nausea / vomiting.
- The majority of epistaxis is due to anterior bleeding and may be controlled by compressing the nostrils.
- Bleeding may also be occurring posteriorly; evaluate for posterior bleeding by examining the posterior pharynx.
- When compressing the nostrils, maintain constant pressure for at least ten minutes. Compression will be ineffective if it is not continuous. Note that allowing the patient to blow their nose may cause bleeding to restart.
- Packing the nose with tissue paper, cottonballs, tampons, etc. is less effective than compressing the nostrils.

## Performance Improvement Suggestions

- Uninterrupted compression of nostrils
- Documentation of medication history, especially anticoagulants and/or antiplatelet agents

## Protocol M-6 – 2014 Epistaxis

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Medical

# Fever / Infection Control



## History

- Age
- Duration of fever
- Maximum temperature
- Past medical history
- Medications
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Travel history
- Last acetaminophen or ibuprofen

## Signs & Symptoms

- Warm
- Flushed
- Diaphoretic
- Chills / Rigors

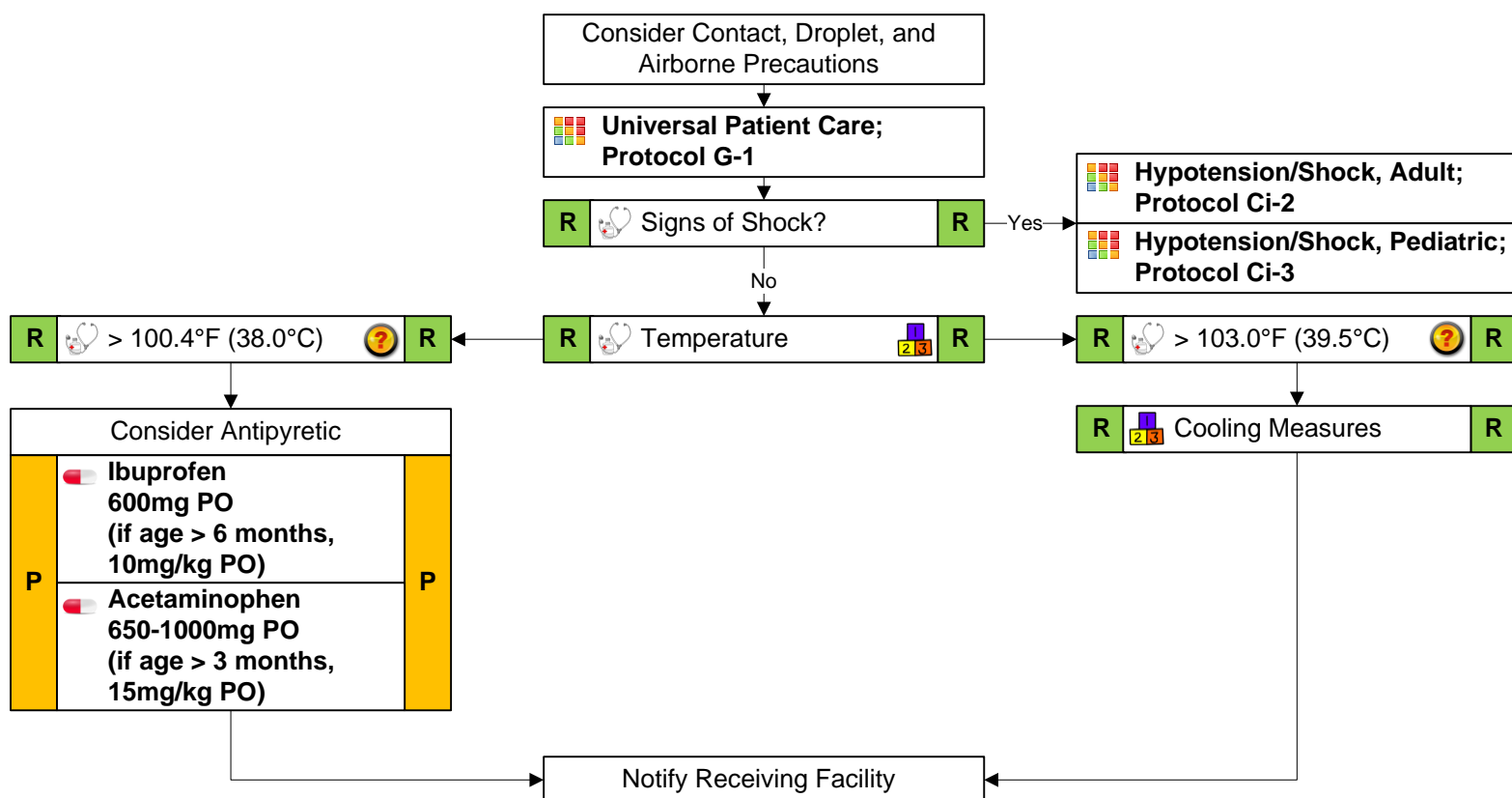
## Associated Symptoms

(helpful to localize source)

- Myalgias, cough, chest pain, headache, dysuria, abdominal pain, rash, mental status changes

## Differential

- Infections / sepsis
- Cancer / tumors / lymphomas
- Medication or drug interaction
- Connective tissue disease (arthritis, vasculitis)
- Hyperthyroidism
- Heat stroke
- Meningitis



## Pearls

- **DO NOT** give aspirin to a child.
- Consider environmental hyperthermia if temperature is > 104-105°F.
- Utilize cooling measures:
  - passive cooling (removal of clothing)
  - active cooling (sponge patient's skin with tepid water)
  - do not use rubbing alcohol, cold water, or ice to cool

## Performance Improvement Suggestions

- Documentation of temperature
- Assessment of end-organ perfusion

## Protocol M-7 – 2014 Fever / Infection Control

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Medical

# Hypoglycemia / Hyperglycemia



## History

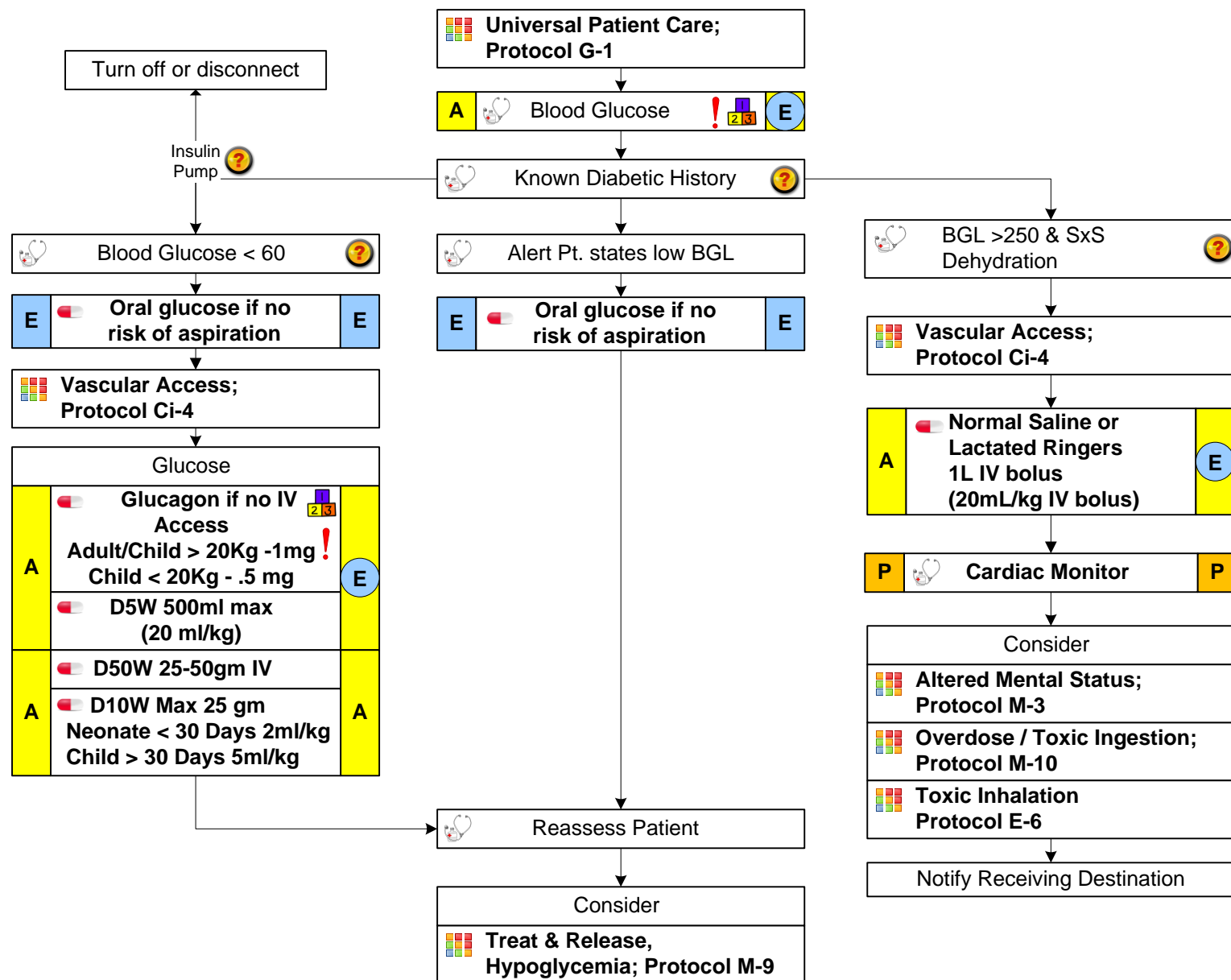
- Known diabetic, bracelet, or necklace
- Drugs, drug paraphernalia
- Report of drug use or toxic ingestion
- Insulin dependant
- Oral Hypoglycemic Agents

## Signs and Symptoms

- Decrease in mental status
- Change in baseline mental status
- Bizarre behavior
- Measured blood glucose
- Dehydration

## Differential

- Alcohol
- CNS (increased pressure, headache, stroke, CNS lesions, vestibular)
- Myocardial infarction
- Diabetes
- Sepsis
- Infections



## Pearls

- Never assume the patient is merely intoxicated.
- If the patient has an altered mental status and blood glucometry is unable to be obtained, treat the patient for hypoglycemia.
- It may take 10-15 minutes for the patient to respond to IM Glucagon. When patient becomes alert, encourage oral carbohydrate intake.

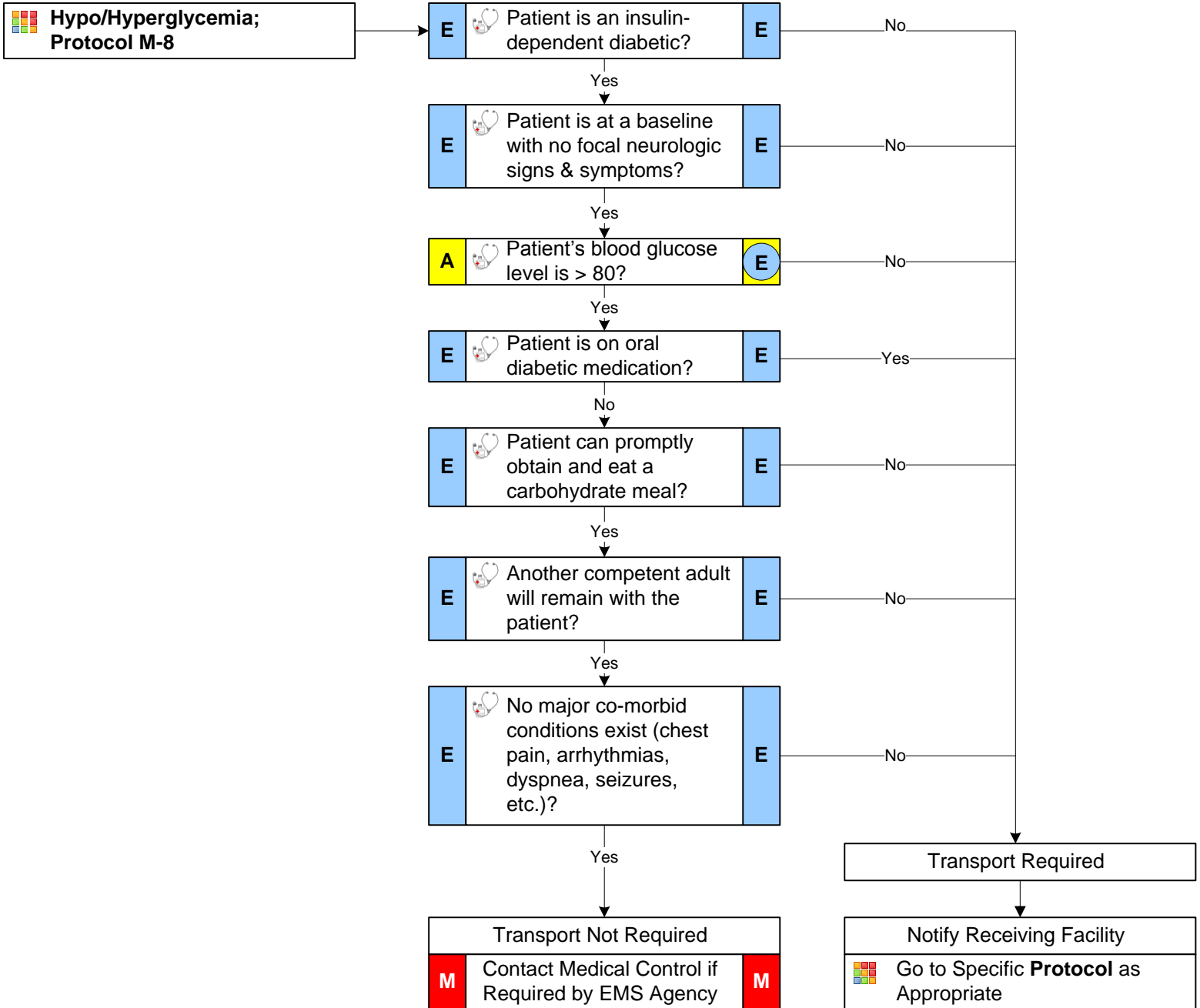
## Performance Improvement Suggestions

- Documentation of pre- and post-treatment blood glucometry
- Documentation of patient response to any treatment

## Protocol M-8 – 2014 Hypoglycemia / Hyperglycemia

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# Treat & Release, Hypoglycemia



## Pearls

- Diabetic patients that are treated with sulfonylurea medications (Glipizide, Glyburide, etc.) may prolong hypoglycemia and usually require hospitalization.
- Some diabetic patients may develop recurrent hypoglycemia after treatment; consider remaining on-scene to recheck blood glucometry prior to releasing the patient.

## Performance Improvement Suggestions

- Documentation of pre- and post-treatment blood glucometry
- Documentation of specific diabetic medications

## Protocol M-9 – 2014 Treat & Release, Hypoglycemia

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# Overdose / Toxic Ingestion



## History

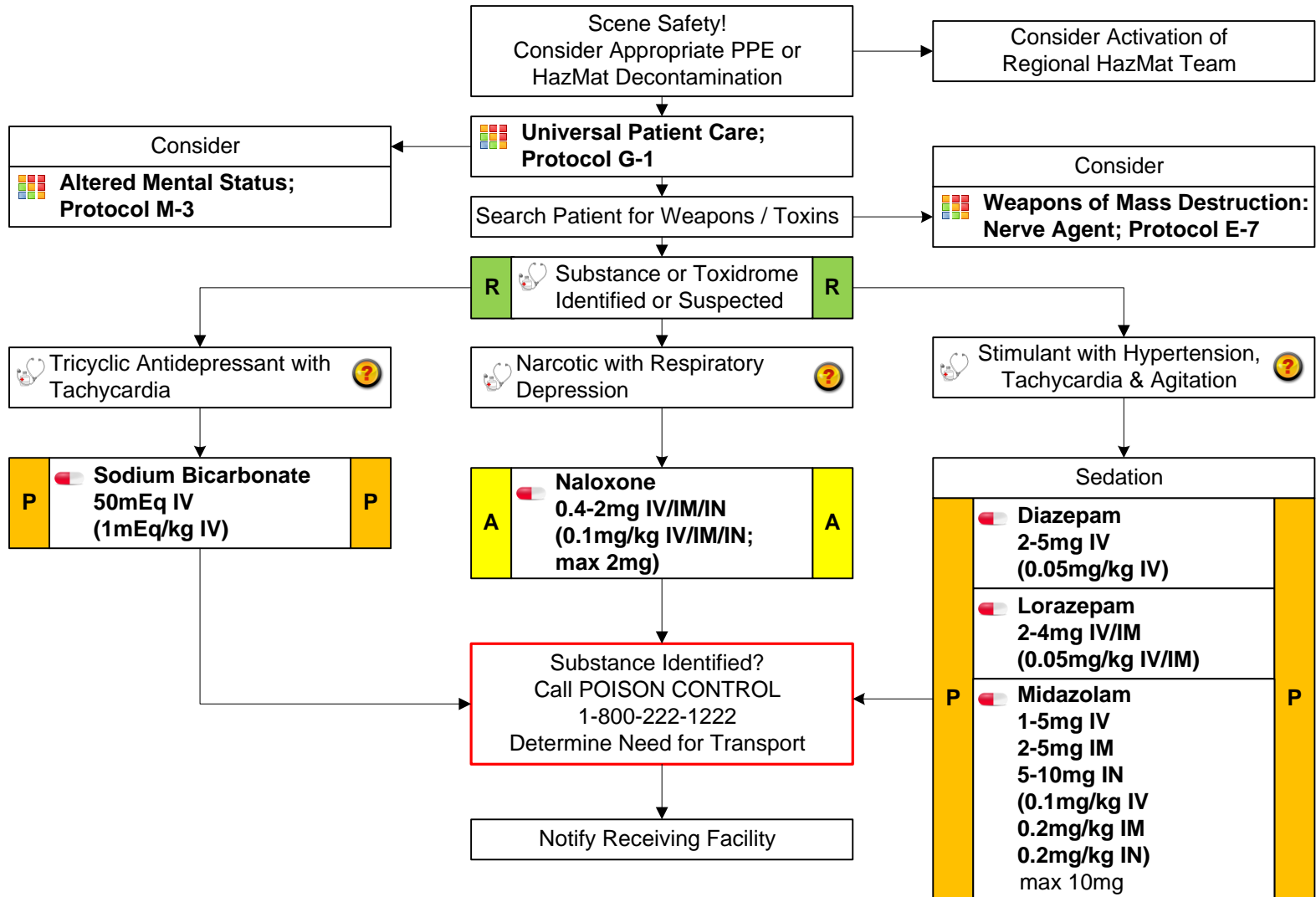
- Ingestion or suspected ingestion of a potentially toxic substance
- Quantity and route of substance ingested
- Time of ingestion
- Reason of ingestion (suicidal, criminal, accidental)
- Available medications in home
- Past medical history & medications

## Signs & Symptoms

- Changes in mental status
- Hypotension or hypertension
- Decreased respiratory rate
- Tachycardia or bradycardia
- Dysrhythmias
- Seizures
- Mucosal burns
- Solvent odor

## Differential

- Tricyclic antidepressants (TCAs)
- Acetaminophen or Aspirin
- Depressants
- Stimulants
- Anticholinergic agents
- Cardiac medications
- Solvents, alcohols, cleaning agents
- Insecticides or organophosphates



## Pearls

- Do not rely on the patient's history of ingestion, especially in cases of attempted suicide.
- Make sure the patient is not carrying additional medications or weapons.
- Bring medication bottles, contents, and any emesis to the Emergency Department.
- Consider toxic gas if there are multiple patients in an enclosed space. Do not enter without proper training and equipment.
- Do not induce vomiting or administer Ipecac.
- In suspected tricyclic antidepressant (TCA) overdose, consider early intubation and hyperventilation.
- Notify the receiving facility to prepare for decontamination if the patient is potentially contaminated.

## Performance Improvement Suggestions

- Documentation of utilization of antidotes
- Assessment of scene safety

## Protocol M-10 – 2014 Overdose / Toxic Ingestion

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Medical



# Seizure, Adult



## History

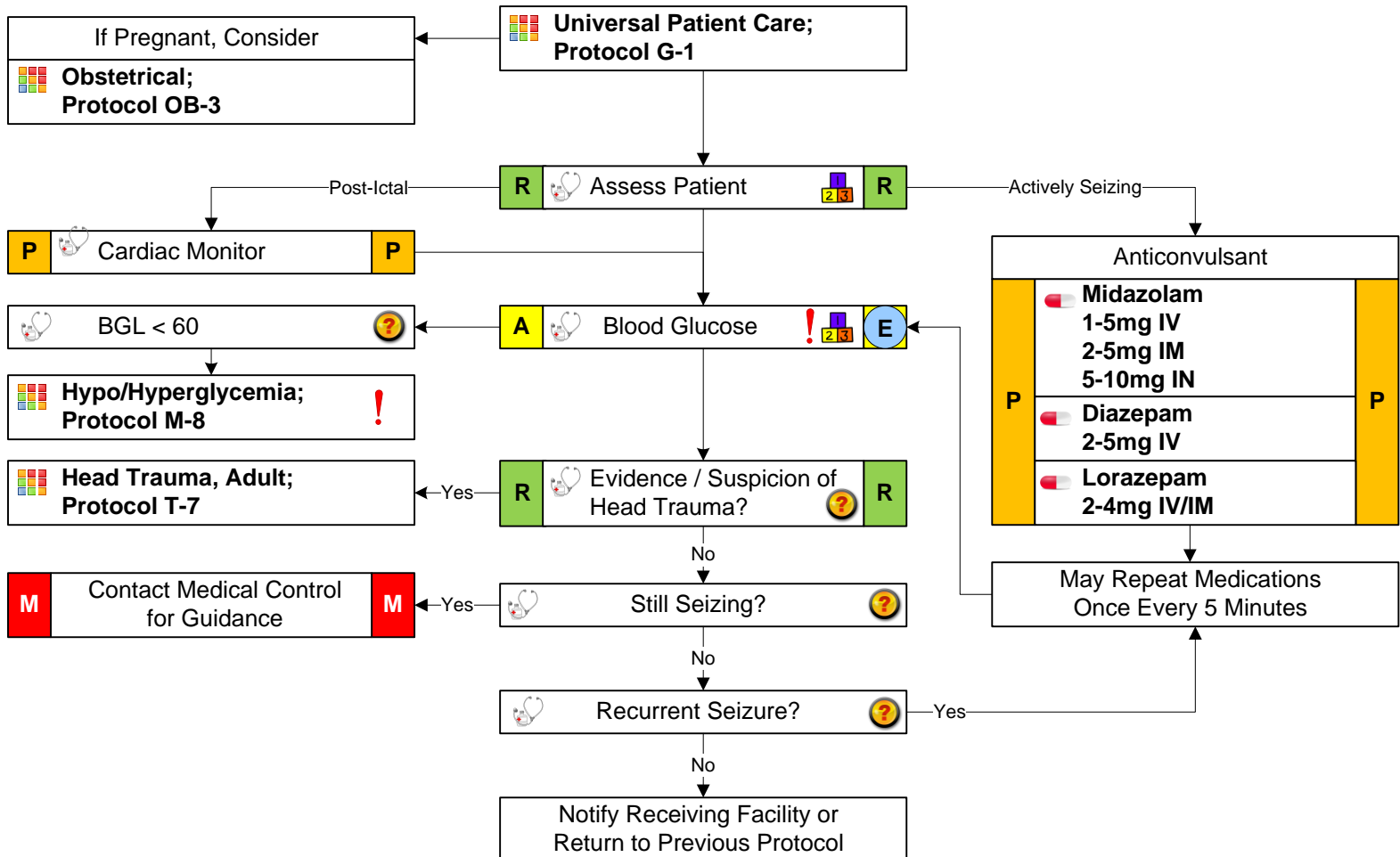
- Reported / witnessed seizure activity
- Previous history of seizures
- Medical alert tag information
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy
- Substance abuse

## Signs & Symptoms

- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconscious

## Differential

- Head trauma / tumor / stroke
- Metabolic, hepatic, or renal failure
- Hypoxia
- Electrolyte abnormality (Na, Ca, Mg)
- Hypoglycemia
- Substance abuse / withdrawal
- Medication non-compliance
- Infection / fever
- Eclampsia
- Dysrhythmia



## Pearls

- Be prepared to assist ventilations, especially if a benzodiazepine is used.
- Seizures may be secondary to head trauma. Seizures may also be the cause of a head or c-spine injury.
- The preferred route for Midazolam is IM or IN if IV access is not available.
- Recheck glucometry after giving Dextrose or Glucagon; in the case of hypoglycemia, recheck glucometry if seizure reoccurs.

## Performance Improvement Suggestions

- Documentation of glucometry
- Description of witnessed seizure activity

## Protocol M-11 – 2014 Seizure, Adult

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Medical

# Seizure, Pediatric



## History

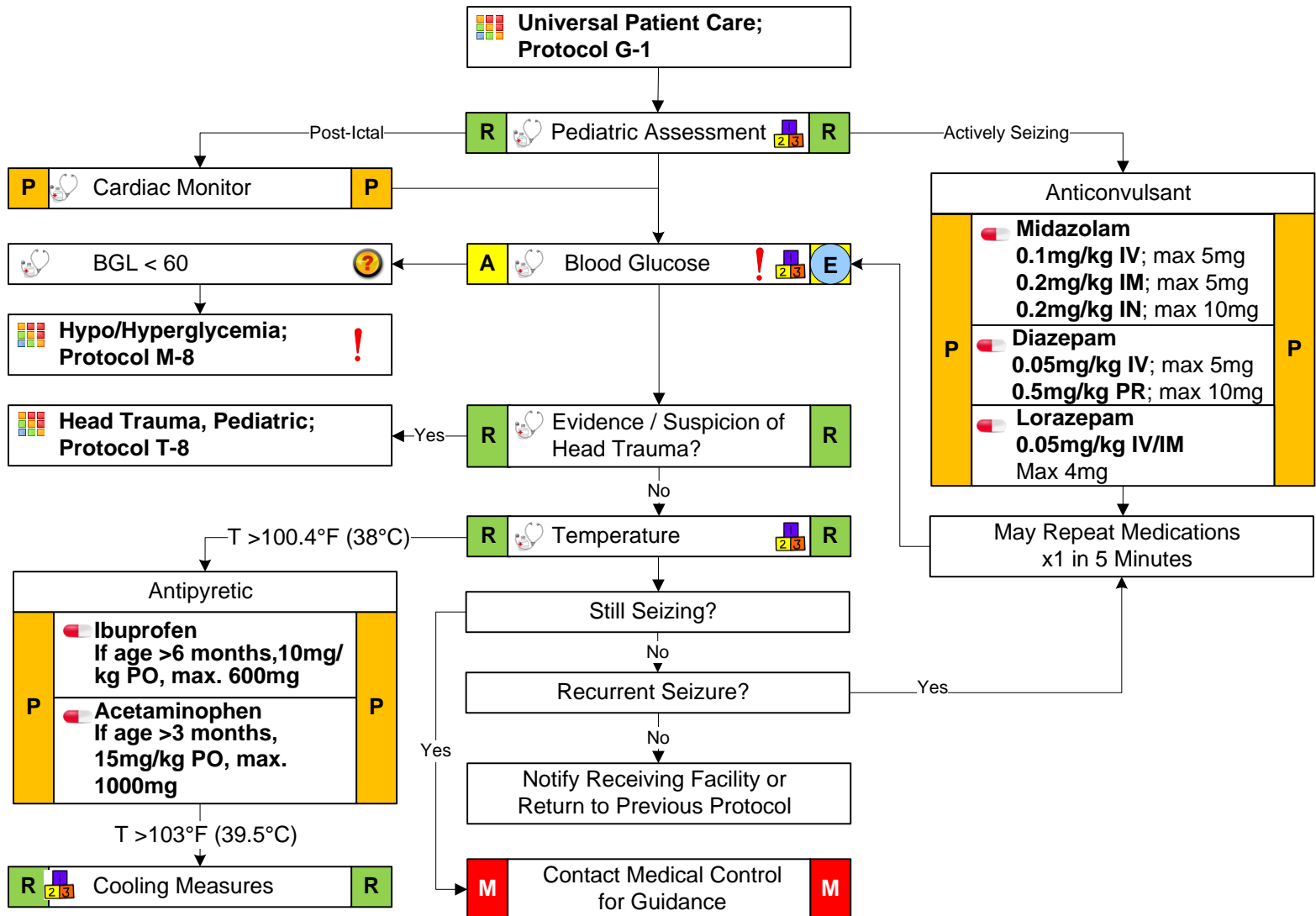
- Fever
- Reported / witnessed seizure activity
- Previous history of seizures
- Medical alert tag information
- Seizure medications
- History of head trauma
- History of diabetes
- Congenital abnormality

## Signs & Symptoms

- Decreased mental status
- Sleepiness
- Observed seizure activity
- Evidence of trauma
- Hot, dry skin or elevated body temperature
- Unconscious

## Differential

- Fever / infection
- Head trauma / tumor
- Medication / toxin
- Hypoxia / respiratory failure
- Electrolyte abnormality (Na, Ca, Mg)
- Hypoglycemia



## Pearls

- Addressing the ABCs and hypoglycemia is more important than stopping the seizure.
- Be prepared to assist ventilations, especially if a benzodiazepine is used.
- Seizures may be secondary to head trauma. Seizures may also be the cause of a head or c-spine injury.
- In infant patients, a seizure may be the only evidence of a closed head injury.
- The preferred route for Midazolam is IM or IN if IV access is not available.
- Recheck glucometry after giving Dextrose or Glucagon; in the case of hypoglycemia, recheck glucometry if seizure reoccurs.

## Performance Improvement Suggestions

- Documentation of glucometry & temperature
- Description of witnessed seizure activity

## Protocol M-12 – 2014 Seizure, Pediatric

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Medical

# Suspected Stroke



## History

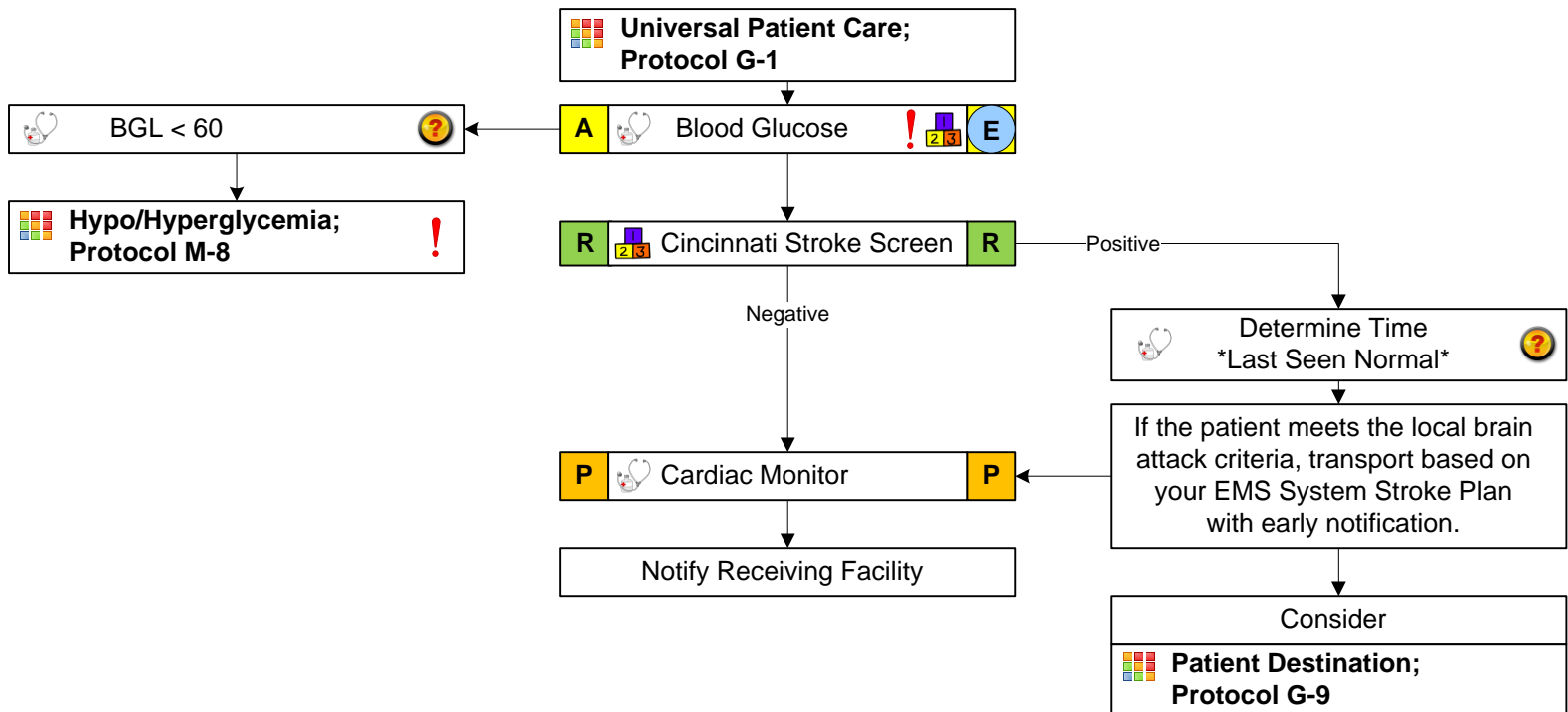
- Previous cerebrovascular accident or transient ischemic attack
- Previous cardiac or vascular surgery
- Associated diseases:
  - Diabetes
  - Hypertension
  - Coronary artery disease
- Atrial fibrillation
- Medications (anticoagulants)
- History of trauma

## Signs & Symptoms

- Altered mental status
- Unilateral weakness / numbness
- Visual field deficit / cortical blindness
- Aphasia / dysarthria
- Vertigo / ataxia
- Vomiting / headache
- Seizures
- Hypertension / hypotension

## Differential

- Transient ischemic attack
- Seizure / Todd's paralysis
- Hypoglycemia
- Stroke:
  - Thrombotic or Embolic ~85%
  - Hemorrhagic ~15%
- Tumor
- Trauma
- Migraine headache



## Pearls

- The window for tissue Plasminogen Activator (TPA) is typically 3 hours but may be extended to 4.5 hours for certain brain attack patients. The window for intra-arterial TPA (IA TPA) is typically 6 hours. The window for mechanical thrombectomy is 8 hours. Consult with your local stroke center for specific patient criteria and the facility's brain attack capabilities.
- The phrase *last seen normal* is defined as the last witnessed time the patient was symptom-free. For example, a patient who awakens with stroke symptoms has a *last seen normal* time of the previous night when the patient was symptom-free, not when the patient awoke.
- Hypertension is commonly present with a stroke and is not generally treated unless severe or thrombolytic therapy is anticipated.
- Be alert for airway problems (dysphagia, vomiting, aspiration).
- Hypoglycemia can present as a localized neurologic deficit, especially in the elderly. Once hypoglycemia is corrected, be sure to return to this protocol.

## Performance Improvement Suggestions

- Documentation of Cincinnati stroke screen results and, if applicable, time *last seen normal*
- Documentation of blood glucometry

## Protocol M-13 – 2014 Suspected Stroke

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Medical

# Syncope



## History

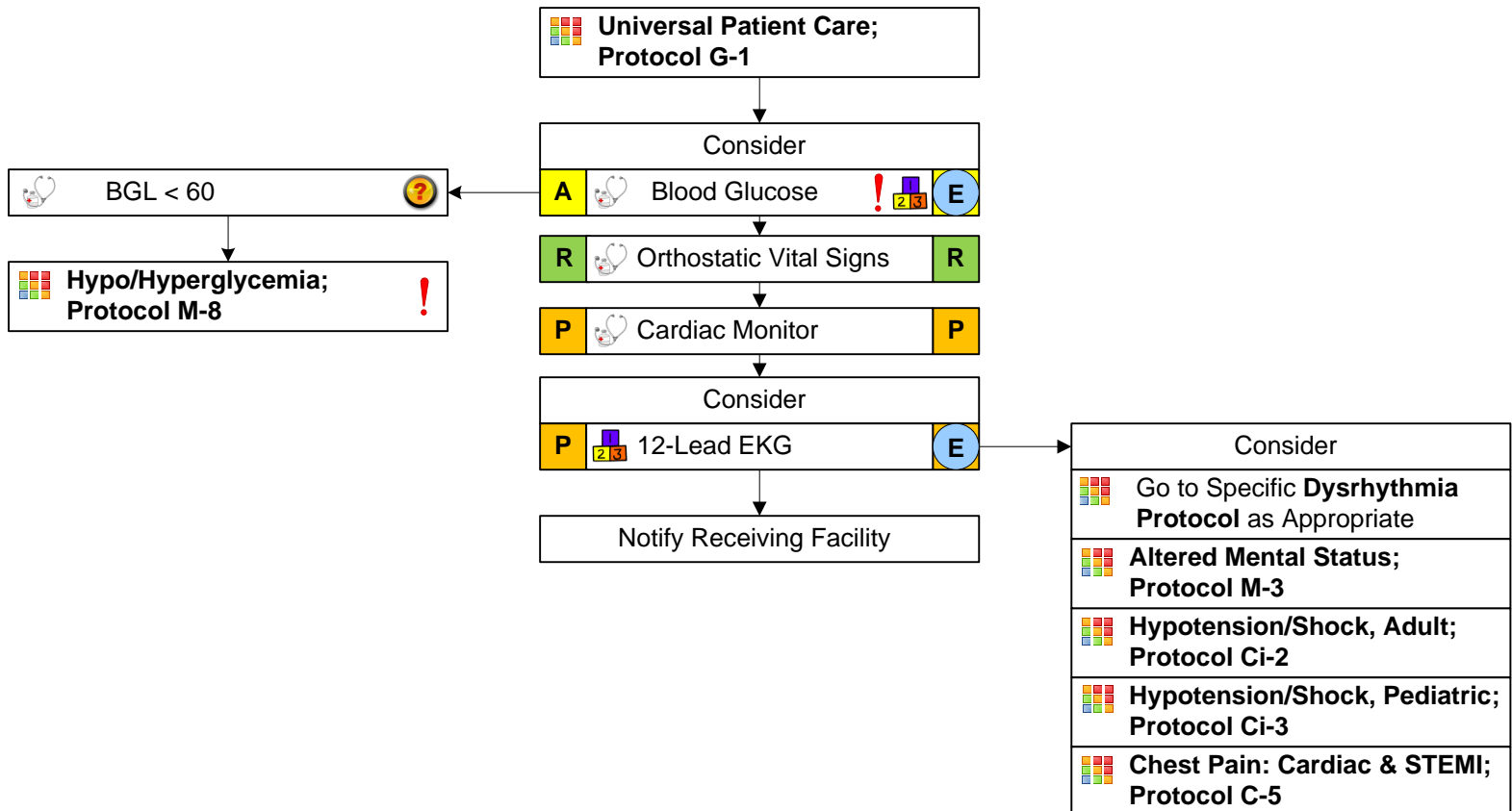
- History of cardiac problems, stroke, seizures
- Occult blood loss: gastrointestinal or ectopic
- Female patients: nausea, vomiting, diarrhea
- Any medications
- Past medical history

## Signs & Symptoms

- Loss of consciousness with recovery
- Lightheadedness, dizziness
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Decreased blood pressure

## Differential

- Vasovagal
- Orthostatic hypotension
- Cardiac syncope
- Micturition / defecation syncope
- Psychiatric
- Pulmonary embolism
- Hypoglycemia
- Seizure
- Shock
- Toxicologic (alcohol)
- Medication side effect: hypertension
- Ectopic pregnancy



## Pearls

- Assess for signs and symptoms of trauma if patient is associated with or had a questionable fall with syncope.
- Consider dysrhythmias, gastrointestinal bleeds, ectopic pregnancy, and seizure as possible causes of syncope.
- Although the patient may appear well at the time of EMS arrival, the patient should still be transported, even if no obvious cause of syncope is apparent.
- More than 25% of syncope in geriatric patients is cardiac dysrhythmia based.

## Performance Improvement Suggestions

- Documentation of cardiac rhythm
- Consideration of cervical spine injury in case / setting of fall

## Protocol M-14 – 2014 Syncope

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Medical

# Vomiting & Diarrhea



## History

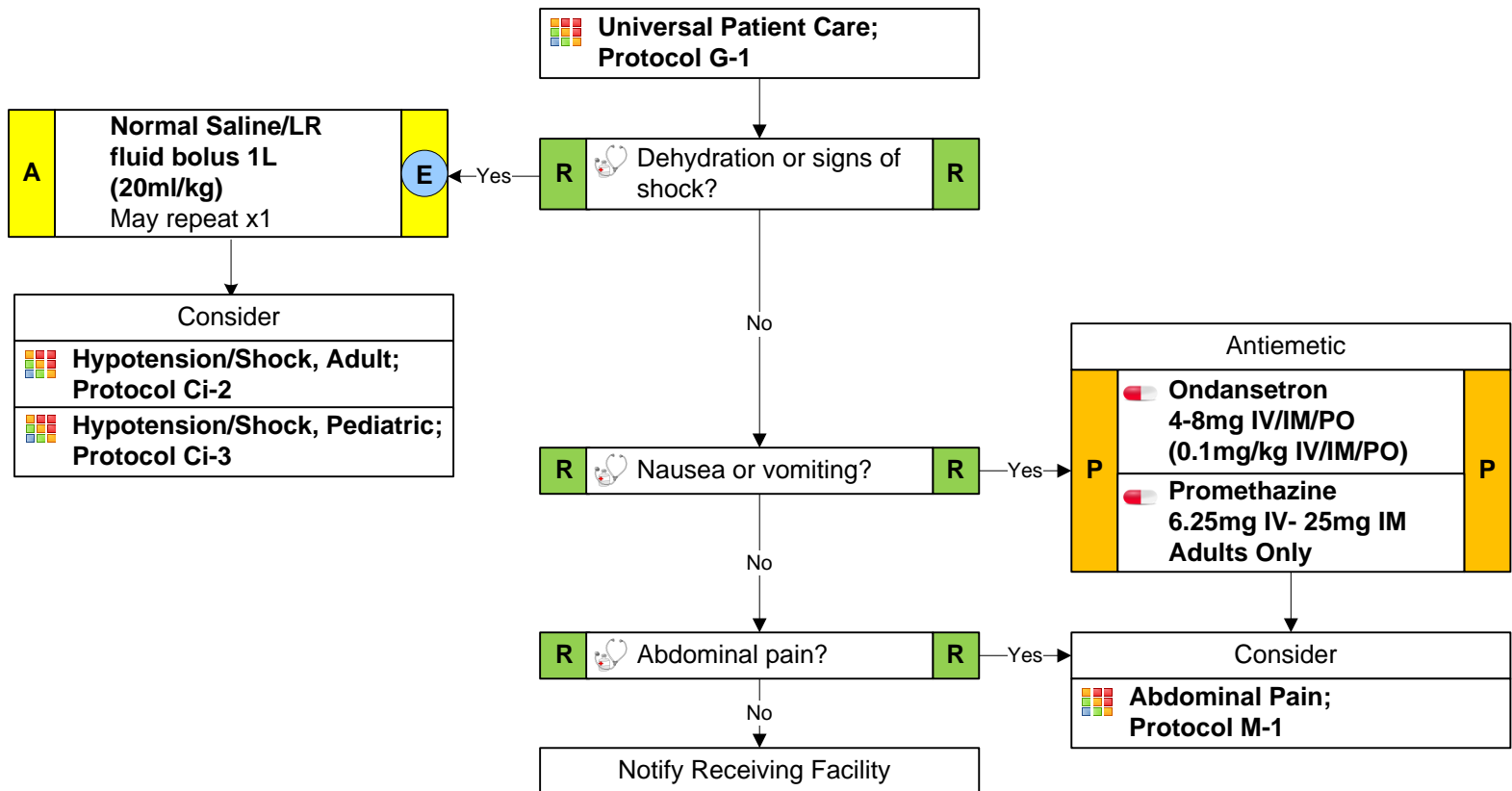
- Severity: frequency, quantity, duration
- Recent travel history
- Recent contact with ill persons
- Recent antibiotics / NSAIDs
- Previous abdominal surgery
- Alcohol abuse
- Possible pregnancy
- Abdominal pain

## Signs & Symptoms

- Distention
- Abdominal tenderness
- Bilious, bloody, or coffee ground-like emesis
- Hematochezia or melena
- Fever
- Vertigo

## Differential

- CNS (increased pressure, headache, stroke, CNS lesions, vestibular)
- Myocardial infarction
- Diabetic ketoacidosis
- Appendicitis, bowel obstruction, pyloric stenosis, gastritis / PUD, pancreatitis
- OB/GYN (pregnancy, ovarian cyst, PID)
- Infections (pyelo, colitis, pneumonia)
- Gastroenteritis (viral, bacterial, toxin)
- Renal failure



## Pearls

- Promethazine (Phenergan) may cause sedation, especially in the elderly, as well as other undesirable effects. Ondansetron (Zofran) is preferred over Promethazine.
- Consider cardiac ischemia when the patient presents with vomiting and upper abdominal pain.
- In pediatric patients, assure an appropriate weight-based volume of intravenous fluids is given.

## Performance Improvement Suggestions

- Documentation of pain severity, if present

## Protocol M-15 – 2014 Vomiting & Diarrhea

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Medical

# Dental Problems



## History

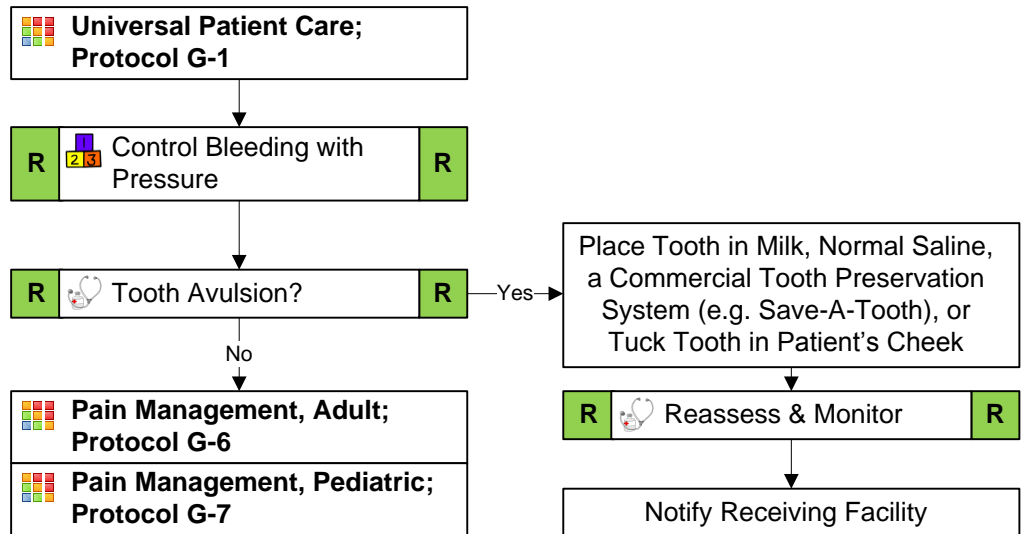
- Age
- Past medical history
- Medications
- Onset of pain or injury
- Trauma involving the teeth
- Location of tooth
- Whole versus partial tooth injury

## Signs & Symptoms

- Bleeding
- Pain
- Fever
- Swelling
- Missing or fractured tooth / teeth

## Differential

- Decay
- Infection
- Fracture
- Avulsion
- Abscess
- Facial cellulitis
- Impacted teeth (wisdom teeth)
- Temporomandibular Joint Disorder (TMJ) syndrome
- Myocardial infarction



## Pearls

- Do not tuck an avulsed tooth into the patient's cheek if there is a possibility of aspiration.
- Significant soft tissue swelling to the face or oral cavity may represent cellulitis or an abscess.
- On-scene and travel times should be minimized for patients with complete tooth avulsions; re-implantation is possible within four hours if the tooth is handled properly.
- Avulsed teeth may be gently rinsed if grossly contaminated, but should not be scrubbed or brushed.
- Pain associated with the teeth should be assessed for sensitivity to cold or heat and tenderness to touch or tapping.
- Occasionally, cardiac chest pain may radiate to the jaw.

## Performance Improvement Suggestions

- Proper handling of avulsed teeth
- Documentation of pain management

## Protocol M-16 – 2014 Dental Problems

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Medical

# Childbirth & Labor



## History

- Due date
- Time contractions started & interval
- Rupture of membranes
- Duration & amount of any vaginal bleeding
- Sensation of fetal activity
- Past medical & delivery history
- Medications
- Gravida / Para status
- High-risk pregnancy
- Twins, triplets, etc.
- Trauma

## Signs & Symptoms

- Contractions / pain
- Vaginal discharge or bleeding
- Crowning or mother's urge to push
- Meconium

## Differential

- Normal childbirth
- Abnormal presentation:
  - Buttocks
  - Foot / hand
- Prolapsed cord
- Placenta previa
- Abruptio placenta



## Universal Patient Care; Protocol G-1

Left Lateral Patient Positioning

R	Hypertension?	R
	Abnormal vaginal bleeding?	

Yes



## Obstetrical; Protocol OB-3

No

R	Inspect Perineum (not digital vaginal exam)	R
---	---	---

Not Crowning



R	Monitor & reassess	R
---	--------------------	---

	Crowning / Imminent Delivery
--	------------------------------

Prepare for on-scene delivery

R	Childbirth - Normal	R
E	Childbirth - Complicated	E

Newborn; Protocol OB-2

Childbirth - Complicated

Complicating Factors:

- < 36 weeks gestation
- abnormal presentation
- prolapsed cord
- severe vaginal bleeding
- multiple gestation



## Use of Lights & Sirens; Protocol G-4

Supplemental Oxygen

If prolapsed cord is present, position the patient in the knee-chest position; push up on the child's head and discourage pushing.

Yes

Imminent Delivery?

No

Notify Receiving Facility

## Pearls

- If maternal seizures occur, refer to the Obstetrical Emergencies; Protocol OB-3.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal. After delivery, massaging the uterus (lower abdomen) will promote uterine contraction and help to control post-partum bleeding.
- In trauma, best care of the baby is best care of the mother.

## Performance Improvement Suggestions

- Documentation of frequency and duration of contractions, if applicable
- Documentation of the presence or absence of complicating factors

## Protocol OB-1 – 2014 Childbirth & Labor

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OB/Childbirth



# Newborn Child Care



## History

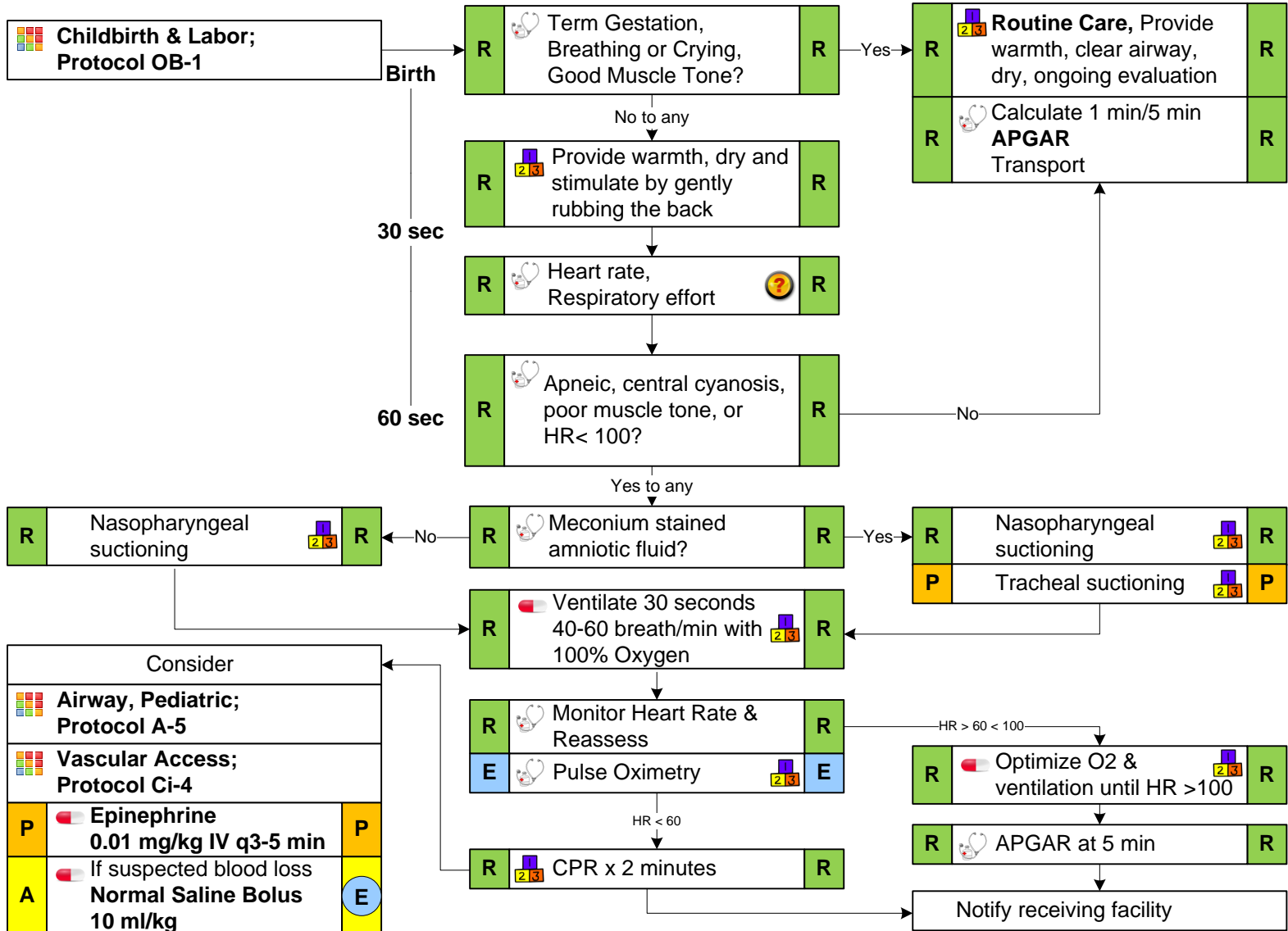
- Due date and gestational age
- Multiple gestation (twins etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Maternal medications
- Maternal risk factors
  - substance abuse
  - smoking

## Signs and Symptoms

- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis (abnormal)
- Altered level of responsiveness
- Bradycardia

## Differential

- Airway failure
  - Secretions
  - Respiratory drive
- Hypothermia
- Maternal medication effect
- Hypovolemia
- Congenital heart disease
- Infection



## Pearls

- CPR in infants is 120 compressions/minute with a 3:1 compression to ventilation ratio.
- Avoid hypothermia. Cover infant's head and maximize ambulance temperature.
- Maternal medications may sedate the infant.
- Focus should be on newborn appearance, not the presence of meconium.

## Performance Improvement Suggestions

- Initial infant temperature at receiving facility
- Documentation of heart rate, central cyanosis and muscle tone

## Protocol OB-2 – 2014 Newborn Child Care

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OB/Childbirth

# Obstetrical Emergency



## History

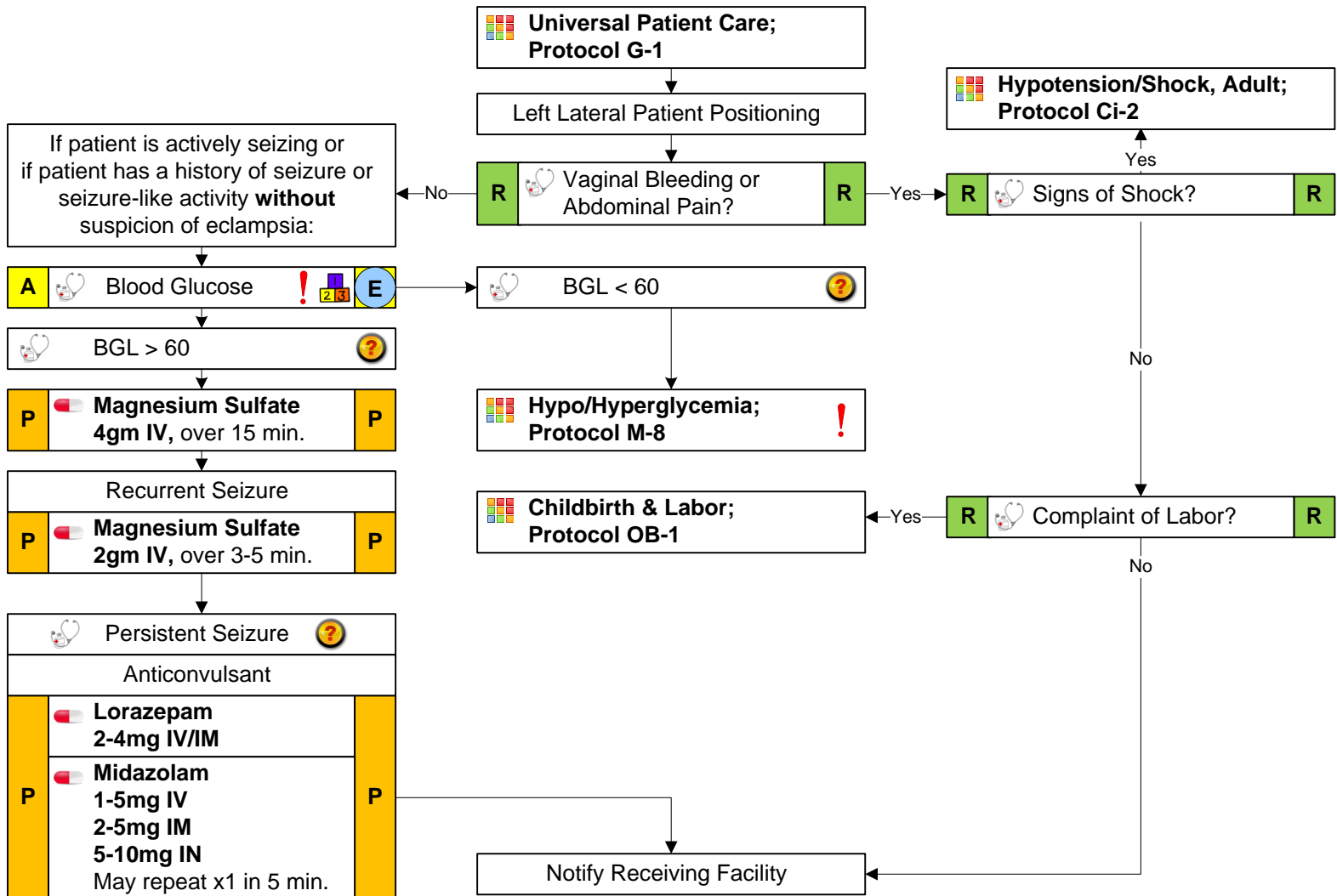
- Past medical history
- Hypertension medications
- Prenatal care
- Prior pregnancies / births
- Gravida / para status
- Last menstrual period (LMP) and estimated due date (EDD)

## Signs & Symptoms

- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe headache
- Visual changes
- New onset of peripheral edema

## Differential

- Pre-eclampsia / eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion



## Pearls

- Maintain the mother in a left lateral position to increase venous return and to minimize the risk of supine hypotensive syndrome.
- With a pregnant patient, hypertension is defined as a blood pressure greater than 140 (systolic) or greater than 90 (diastolic).
- The most common complaint prior to an eclamptic seizure is a severe headache.
- If a pregnant patient > 20 weeks has no pre-existing seizure disorder and presents with a seizure, consider eclampsia – even in the absence of hypertension. Treat non-eclamptic seizures in accordance with Seizure, Adult; Protocol M-11.
- All pregnant patients involved in a motor vehicle collision should be seen immediately by a physician for evaluation and fetal monitoring.
- Magnesium Sulfate may cause hypotension and a decreased respiratory drive. Loss of deep tendon reflexes (areflexia) is usually the first sign of magnesium toxicity which may be reversed with Calcium. Contact Medical Control prior to administering Calcium.

## Performance Improvement Suggestions

- Documentation of blood glucometry in seizure patients
- Documentation of last menstrual period and estimated due date

## Obstetrical Emergency Protocol OB-3 - 2014

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OB/Childbirth

# Burns, Thermal



## History

- Type of exposure (heat, gas, exposure)
- Inhalation / airway injury
- Time of injury
- Past medical history
- Medications
- Associated injury (blunt, blast, penetrating)
- Loss of consciousness

## Signs & Symptoms

- Pain, swelling
- Hypotension / shock
- Airway compromise / distress
- Singed facial or nasal hair
- Hoarseness / wheezing

## Differential

- Superficial (1st degree): red, painful
- Partial thickness (2nd degree): blistering
- Full thickness (3rd degree): painless charred / leathery skin
- Thermal burns
- Chemical burns
- Electrical burns
- Radiation burns



## Universal Patient Care; Protocol G-1

### STOP THE BURNING PROCESS

- Remove rings, bracelets, other constricting items
- Cool wound(s) with lactated ringers, normal saline, sterile water, or tap water
- Beware of hypothermia
  - Do not apply cold fluids to patients with burns > 10% BSA
- Cover burns with dry, sterile sheets or dressings



Hypotension / Signs of Shock?  
2nd or 3rd Degree Burns > 20% BSA?

No

Consider



Pain Management, Adult; Protocol G-6



Pain Management, Pediatric; Protocol G-7



Determine Body Surface Area & Assess Severity



Consider



Toxic Inhalation; Protocol E-6



Normal Saline/LR fluid bolus 1L (20ml/kg) May repeat x1

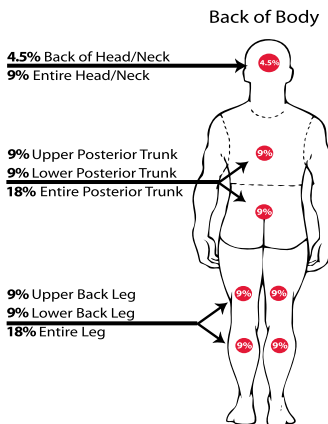
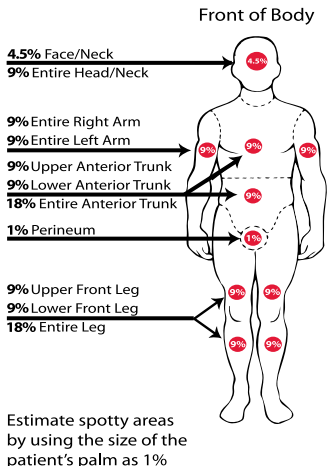


Hypotension/Shock, Adult; Protocol Ci-2



Hypotension/Shock, Pediatric; Protocol Ci-3

Notify Receiving Facility



## Pearls

- Burn patients are trauma patients! Evaluate for multisystem traumas and consider transport to the locally designated trauma center.
- STOP THE BURNING PROCESS!
- Be sure to maintain a high index of suspicion for airway / inhalation injury. Isolated skin burns are not immediately life-threatening.
- Early intubation is required when the patient experiences significant airway / inhalation injury.
- Circumferential burns to the patient's extremities are dangerous due to the potential vascular compromise secondary to soft tissue swelling and compartment syndrome.
- Burn patients are prone to hypothermia. Never apply ice to cool burns. Avoid overcooling; if available, administer warm intravenous fluids to help maintain a normal body temperature.
- Consider the possibility of child abuse in pediatric patients.

## Burn Center Criteria

- Partial thickness (second degree) burns greater than 10% of the total body surface area (BSA)
- Full thickness (third degree) burns of patients in any age group
- Any airway / inhalation injury
- Burns that involve the face, hands, feet, genitalia, perineum or major joints
- Electrical burns (including lightning injury) and chemical burns

## Performance Improvement Suggestions

- Documentation of airway and inhalation exposure
- Documentation of pain assessment and management

## Protocol T-1 – 2014 Burns, Thermal

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Trauma

# Burns, Chemical & Electrical



## History

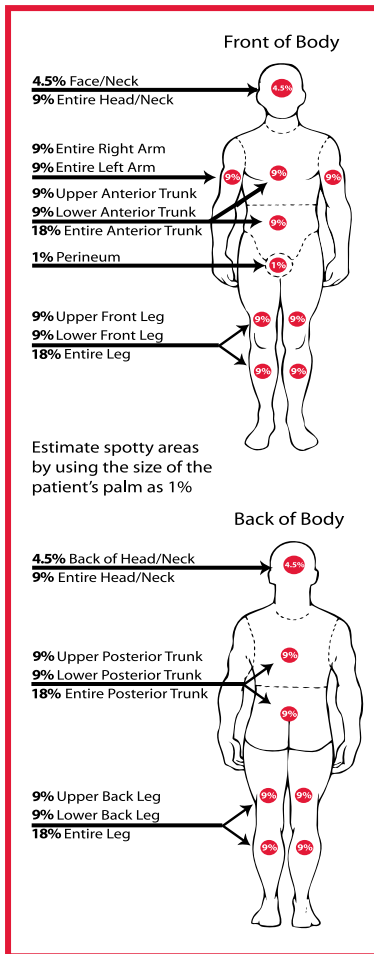
- Type of exposure (heat, gas, exposure)
- Inhalation / airway injury
- Time of injury
- Past medical history
- Medications
- Associated injury (blunt, blast, penetrating)
- Loss of consciousness

## Signs & Symptoms

- Pain, swelling
- Hypotension / shock
- Airway compromise / distress
- Singed facial or nasal hair
- Hoarseness / wheezing
- Dysrhythmias
- Entry and exit wounds

## Differential

- Superficial (1st degree): red, painful
- Partial thickness (2nd degree): blistering
- Full thickness (3rd degree): painless / charred / leathery skin
- Thermal burns
- Chemical burns
- Electrical burns
- Radiation burns



## Scene Safety!

Consider Appropriate PPE or HazMat Decontamination

**STOP THE BURNING PROCESS**

Consider Eye Involvement

R	2 13	Eye Irrigation	R
P		<b>Tetracaine Ophthal.</b> 1-2gtts in affected eye	P
P		<b>Proparacaine Ophthal.</b> 1-2gtts in affected eye	P
P	2 13	Morgan Lens Irrigation	P

A		<b>Normal Saline/LR</b> fluid bolus 1L (20ml/kg) May repeat x1	E
---	--	---	---

**Hypotension/Shock, Adult;**  
**Protocol Ci-2**

Notify Receiving Facility

**Universal Patient Care;**  
**Protocol G-1**

R	Determine Body Surface Area & Assess Severity	R
P	Cardiac Monitor	P

- Remove rings, bracelets, other constricting items
- Immediately flush chemical burns with closest water source until burning stops (minimum 15 min.)
- Expose the patient to identify entry and exit sites
- Cover burns with dry, sterile sheets or dressings

R	Hypotension / Signs of Shock?	R
R	2nd or 3rd Degree Burns > 20% BSA?	R

No

Consider

	<b>Pain Management, Adult;</b> <b>Protocol G-6</b>	
	<b>Pain Management, Pediatric;</b> <b>Protocol G-7</b>	

## Pearls

- Burn patients are trauma patients! Evaluate for multisystem traumas and consider transport to the locally designated trauma center.
- **STOP THE BURNING PROCESS!**
- Chemical Burns:
  - If possible, identify the chemical agent.
  - Do not attempt to neutralize the chemical agent.
  - If the patient is potentially contaminated, notify receiving facility that the patient may need decontamination.
- Electrical Burns:
  - Do not touch the patient until you are certain the electrical source has been disconnected.
  - Do not forget the cardiac monitor – anticipate ventricular or atrial irregularity (to include V-tach, V-fib, heart blocks, etc.)
  - Attempt to identify the nature of the electrical source (AC vs. DC), the amount of voltage, and the amperage the patient may have been exposed to during the electrical shock.

## Performance Improvement Suggestions

- Identification of chemical or electrical source
- Documentation of pain assessment and management

## Protocol T-2 – 2014 Burns, Chemical & Electrical

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Trauma

# Crush Injury Syndrome



## History

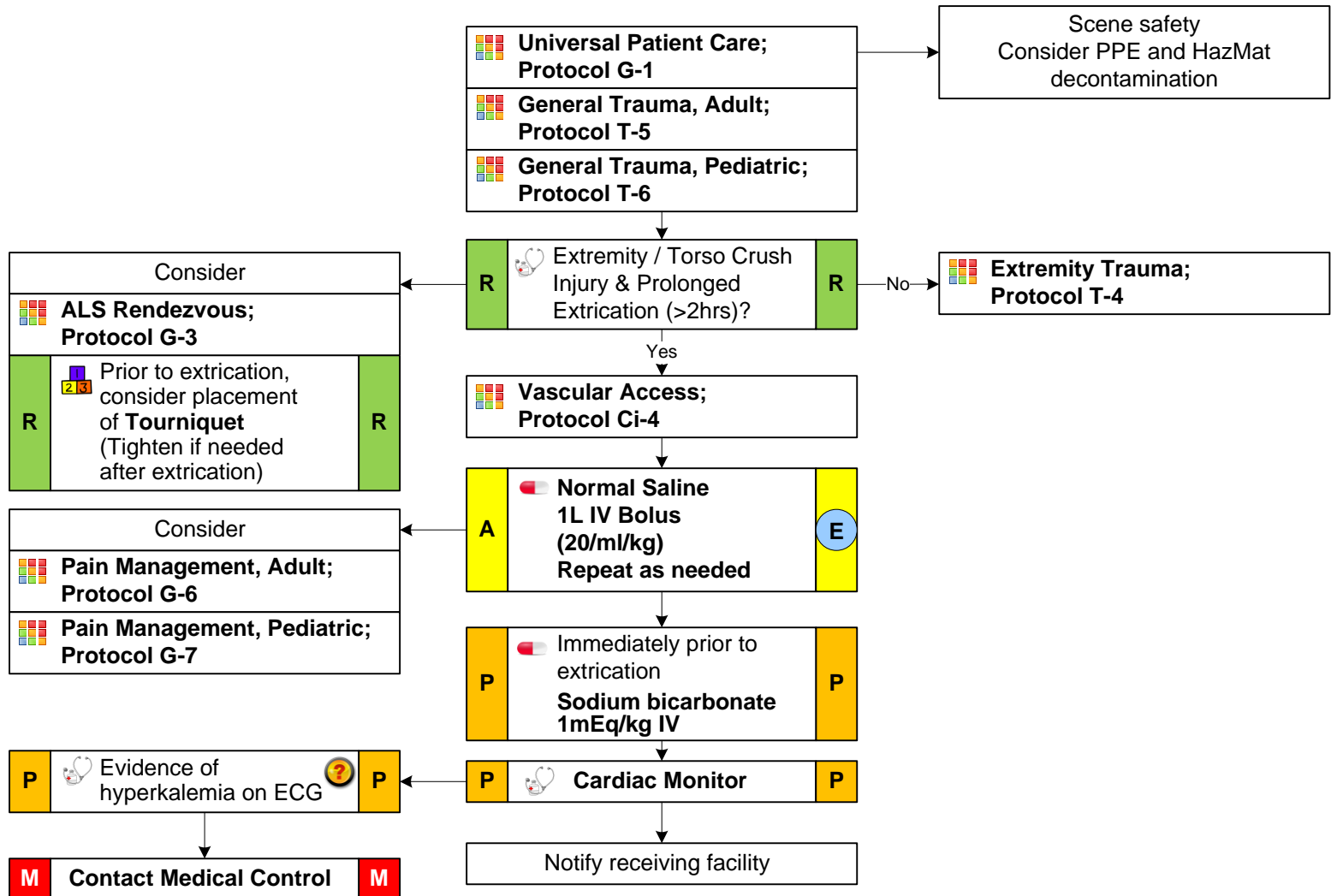
- Mechanism of injury
- Time of onset / duration of entrapment
- Environmental / biological hazards

## Signs & Symptoms

- Pain
- Swelling
- Deformity
- Neurologic deficits (paralysis, parasthesia)
- Vascular deficits (pallor, pulse deficit)
- Poikilothermia

## Differential

- Contusion(s)
- Laceration(s)
- Fracture(s) / dislocation
- Amputation / partial amputation
- Compartment syndrome
- Crush injury / crush injury syndrome



## Pearls

- Crush injury refers to local tissue damage caused by direct injury and prolonged compression. In contrast, crush injury syndrome (CIS) refers to the systemic effects of potassium, myoglobin, and other toxins released from damaged tissue upon reperfusion.
- The likelihood of CIS increases with compression time and the patient's muscle mass.
- Consider respiratory, hearing, and eye protection for the patient during extrication; prevent hypothermia.
- Signs of hyperkalemia include peaked T-waves, a wide QRS, absent P-waves, bradycardia, and sinusoidal shape.
- Hyperkalemia is treated with Calcium, Sodium Bicarbonate, Insulin / Dextrose, and Albuterol. Calcium and Sodium Bicarbonate should be given in separate IV lines to avoid precipitation.
- Lactated Ringers contains potassium and, therefore, should not be given to CIS patients.
- Normal Saline fluid resuscitation prior to and after extrication will help prevent renal failure in CIS patients.

## Performance Improvement Suggestions

- Documentation of presence/absence of hyperkalemia signs on EKG
- Documentation of entrapment duration

## Protocol T-3 – 2014 Crush Injury Syndrome

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# Extremity Trauma



## History

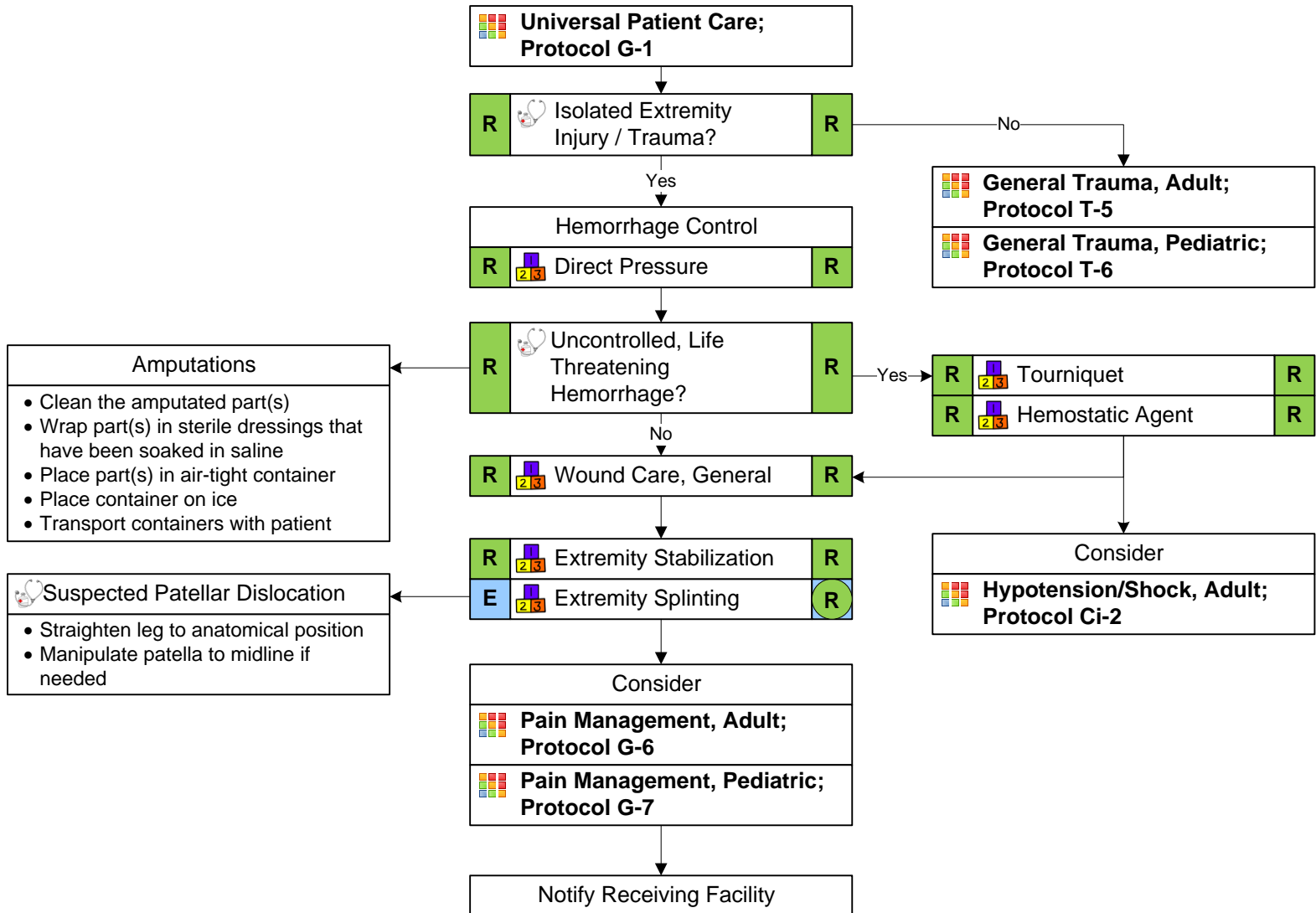
- Type of injury
- Mechanism: crush / penetrating / amputation
- Time of injury
- Open vs. closed fracture(s)
- Wound contamination
- Past medical history
- Medications

## Signs & Symptoms

- Pain, swelling
- Deformity
- Altered sensation / motor function
- Diminished pulse / capillary refill
- Decreased peripheral extremity temperature
- Bony crepitus

## Differential

- Abrasions
- Contusions
- Lacerations
- Sprains
- Dislocations
- Fractures
- Amputations
- Crush syndrome



## Pearls

- With amputations, time is critical! Notify receiving facility as soon as feasible. Consider contacting Medical Control to help determine an appropriate destination.
- Knee dislocations and elbow dislocations / fractures have a high incidence of vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Lacerations should be evaluated for repair as soon as possible.
- Rapid transport is indicated for amputations and vascular compromise.

## Performance Improvement Suggestions

- Documentation of distal neurovascular status
- Documentation of pain severity
- Care of amputated appendage(s)

## Protocol T-4 – 2014 Extremity Trauma

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# General Trauma, Adult



## History

- Time and mechanism of injury
- Height of any falls
- Damage to structures or vehicles
- Location in structure or vehicle
- Others injured or dead-on-scene
- Vehicle speed and details of motor vehicle accident
- Restraints / protective equipment
  - Helmet / pads
- Ejection from vehicle
- Weapon type
- Blast / explosion
- Past medical history
- Medications

## Signs & Symptoms

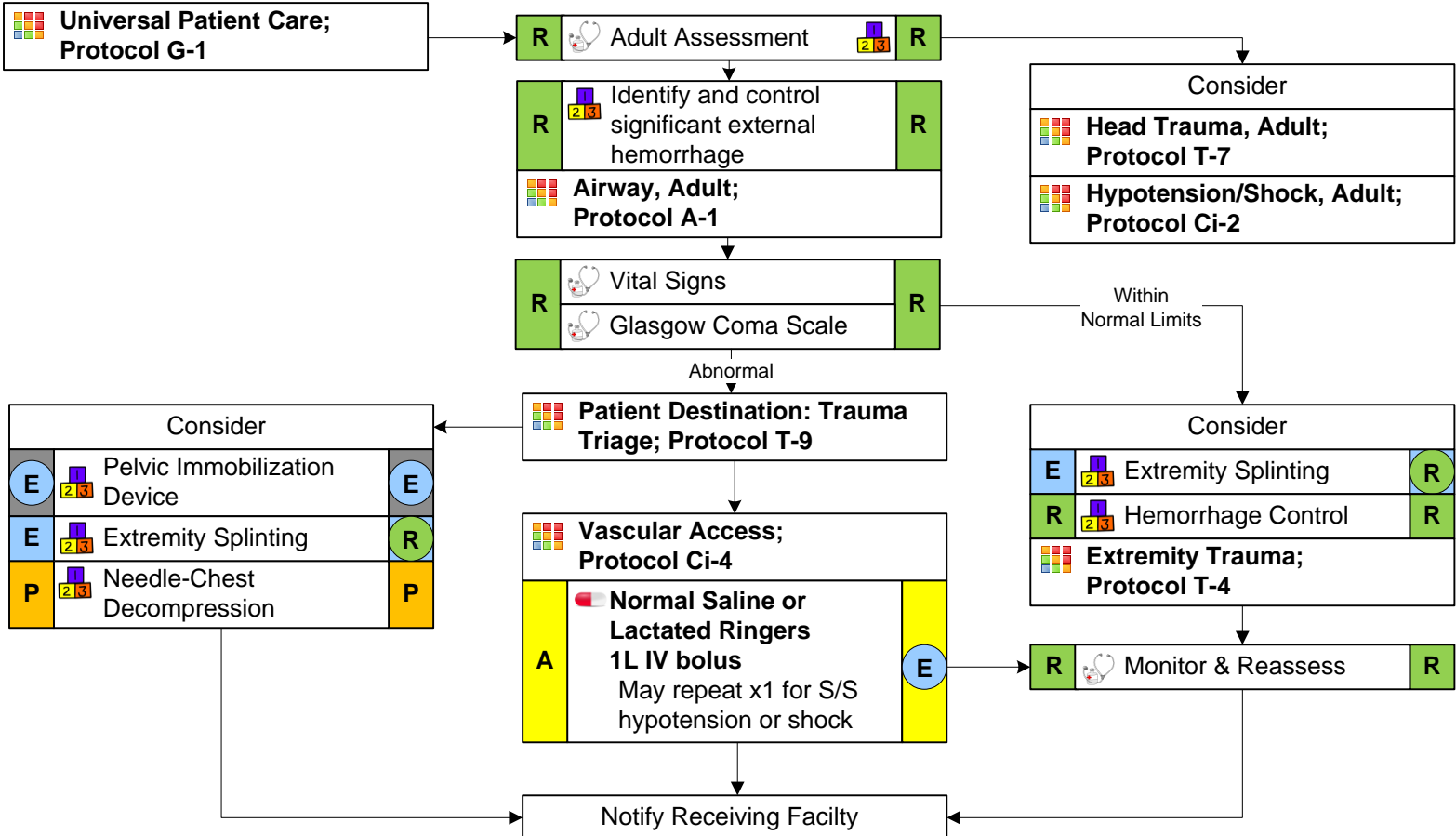
- Pain
- Swelling
- Deformities
- Lesions / bleeding
- Altered mental status
- Unconsciousness or loss of consciousness
- Hypotension or shock
- Respiratory arrest
- Cardiac arrest

## Differential

- Tension pneumothorax
- Flail chest syndrome
- Pericardial tamponade
- Open chest wound(s)
- Hemothorax
- Intra-abdominal bleeding
- Pelvis / femur fracture
- Spinal fracture / spinal cord injury
- Head injury
- Extremity fracture / dislocation
- Airway obstruction
- Hypothermia
- Domestic violence / abuse



## Universal Patient Care; Protocol G-1



## Pearls

- Geriatric patients should be examined with a high level of suspicion. The elderly have limited physiologic reserve and may decompensate with little warning.
- Examine all restraints and protective equipment for damage.
- Prolonged extrications or patients with serious trauma require early activation of air medical resources.
- Scene departure should not be delayed for procedures. If possible, procedures should be performed en route – rapid transport of the unstable trauma patient is the goal.
- Do not overlook the possibility of domestic violence or abuse.
- Bag-Valve-Mask is an acceptable method of managing the patient's airway if pulse oximetry is maintained above 90% SPO<sub>2</sub>.

## Performance Improvement Suggestions

- Documentation of air medical utilization, appropriate destination of patient, and scene times with consideration of mitigating factors

## Protocol T-5 – 2014 General Trauma, Adult

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# General Trauma, Pediatric



## History

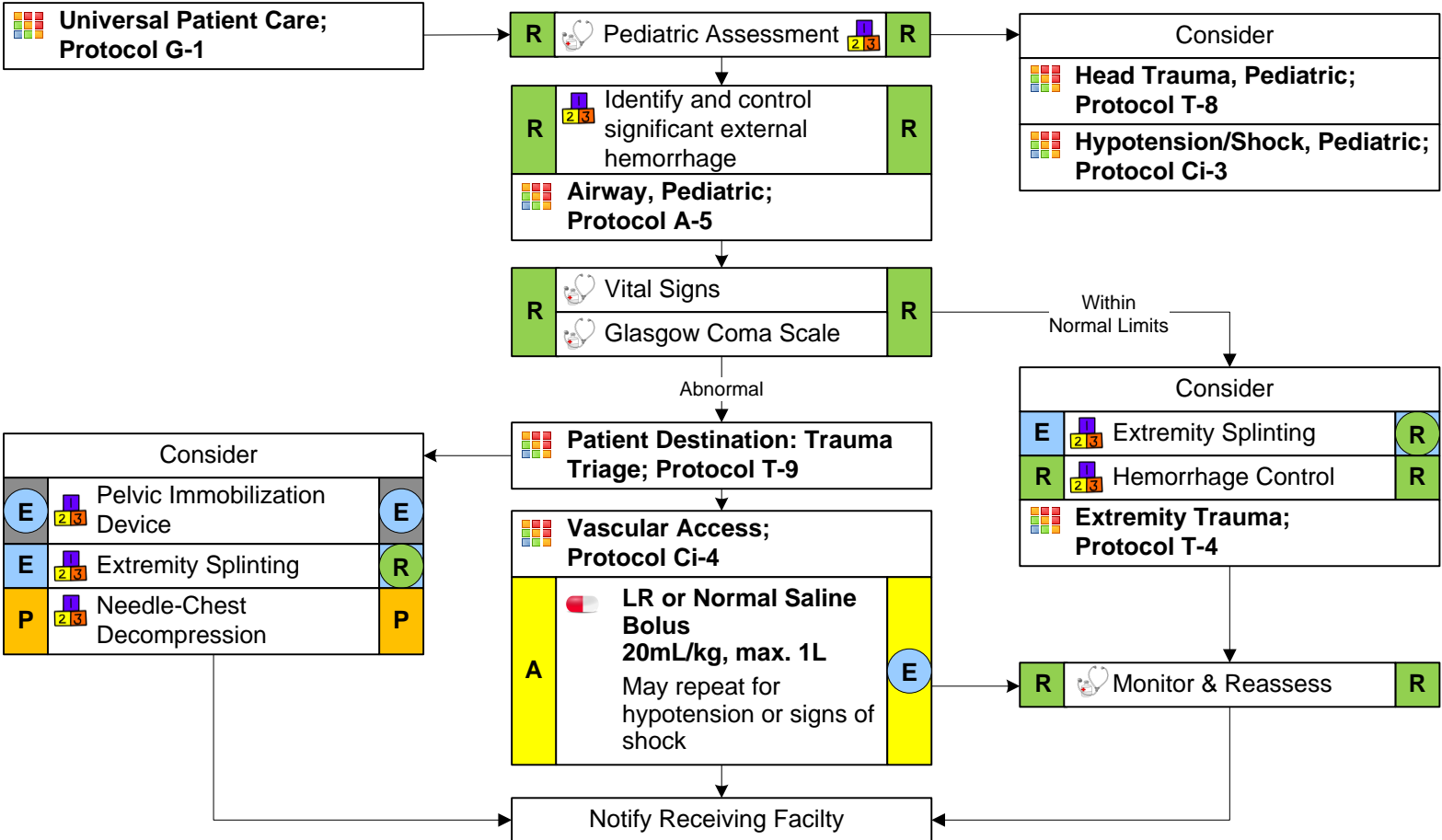
- Time and mechanism of injury
- Height of any falls
- Damage to structures or vehicles
- Location in structure or vehicle
- Others injured or dead-on-scene
- Vehicle speed and details of motor vehicle accident
- Restraints / protective equipment
  - Car seat
  - Helmet / pads
- Ejection from vehicle
- Weapon type
- Blast / explosion
- Past medical history
- Medications

## Signs & Symptoms

- Pain
- Swelling
- Deformities
- Lesions / bleeding
- Altered mental status
- Unconsciousness or loss of consciousness
- Hypotension or shock
- Respiratory arrest
- Cardiac arrest

## Differential

- Tension pneumothorax
- Flail chest syndrome
- Pericardial tamponade
- Open chest wound(s)
- Hemothorax
- Intra-abdominal bleeding
- Pelvis / femur fracture
- Spinal fracture / spinal cord injury
- Head injury
- Extremity fracture / dislocation
- Airway obstruction
- Hypothermia



## Pearls

- Examine all restraints and protective equipment for damage.
- Prolonged extrications or patients with serious trauma require early activation of air medical resources.
- Scene departure should not be delayed for procedures. If possible, procedures should be performed en route – rapid transport of the unstable trauma patient is the goal.
- Do not overlook the possibility of child abuse.
- Bag-Valve-Mask is an acceptable method of managing the patient's airway if pulse oximetry is maintained above 90% SPO<sub>2</sub>.

## Performance Improvement Suggestions

- Documentation of air medical utilization, appropriate destination of patient, and scene times with consideration of mitigating factors

## Protocol T-6 – 2014 General Trauma, Pediatric

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# Head Trauma, Adult



## History

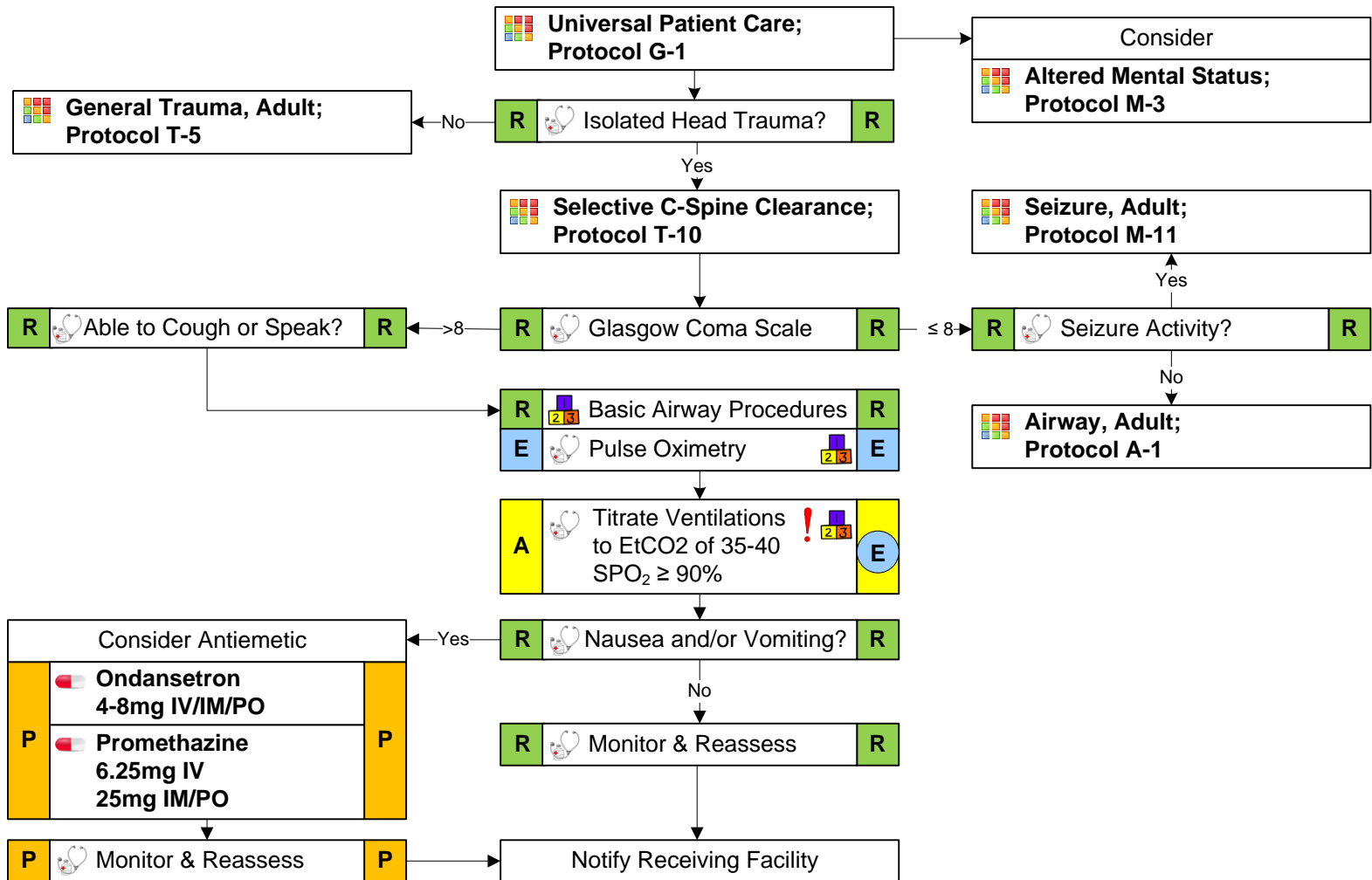
- Time of injury
- Mechanism (blunt v. penetrating)
- Loss of consciousness
- Past medical history
- Medications
- Evidence for multi-systems trauma

## Signs & Symptoms

- Pain, swelling, bleeding
- Altered mental status
- Unconsciousness
- Respiratory distress / failure
- Vomiting
- Seizure activity

## Differential

- Skull fracture
- Brain injury (concussion, contusion, hemorrhage, laceration)
- Epidural / subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Physical abuse



## Pearls

- If Glasgow Coma Scale (GCS) is < 12, consider air or rapid transport. If GCS is ≤ 8, intubation should be anticipated.
- Avoid hyperventilation, except in cases of impending herniation (blown pupil, decorticate or decerebrate posturing, bradycardia). For impending herniation, maintain EtCO<sub>2</sub> between 25-30. In the absence of EtCO<sub>2</sub>, hyperventilate at a rate of 25 breaths per minute.
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's response).
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively.
- Limit intravenous fluids, unless the patient is hypotensive.
- A change in the patient's level of consciousness is the most important item to monitor and document.
- Concussions are periods of confusion associated with trauma and may resolve by the time EMS arrives. If the patient experiences any loss of consciousness or any prolonged confusion or mental status abnormality that does not return to normal within 15 minutes of injury, they should be evaluated by a physician as soon as possible.
- In areas with short transportation times, intubation is not recommended in patients who are spontaneously breathing and who have oxygen saturations greater than 90% with supplemental oxygen.

## Performance Improvement Suggestions

- Documentation of frequency of GCS assessment
- Intubation in a short time of transportation

## Protocol T-7 – 2014 Head Trauma, Adult

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Trauma

# Head Trauma, Pediatric



## History

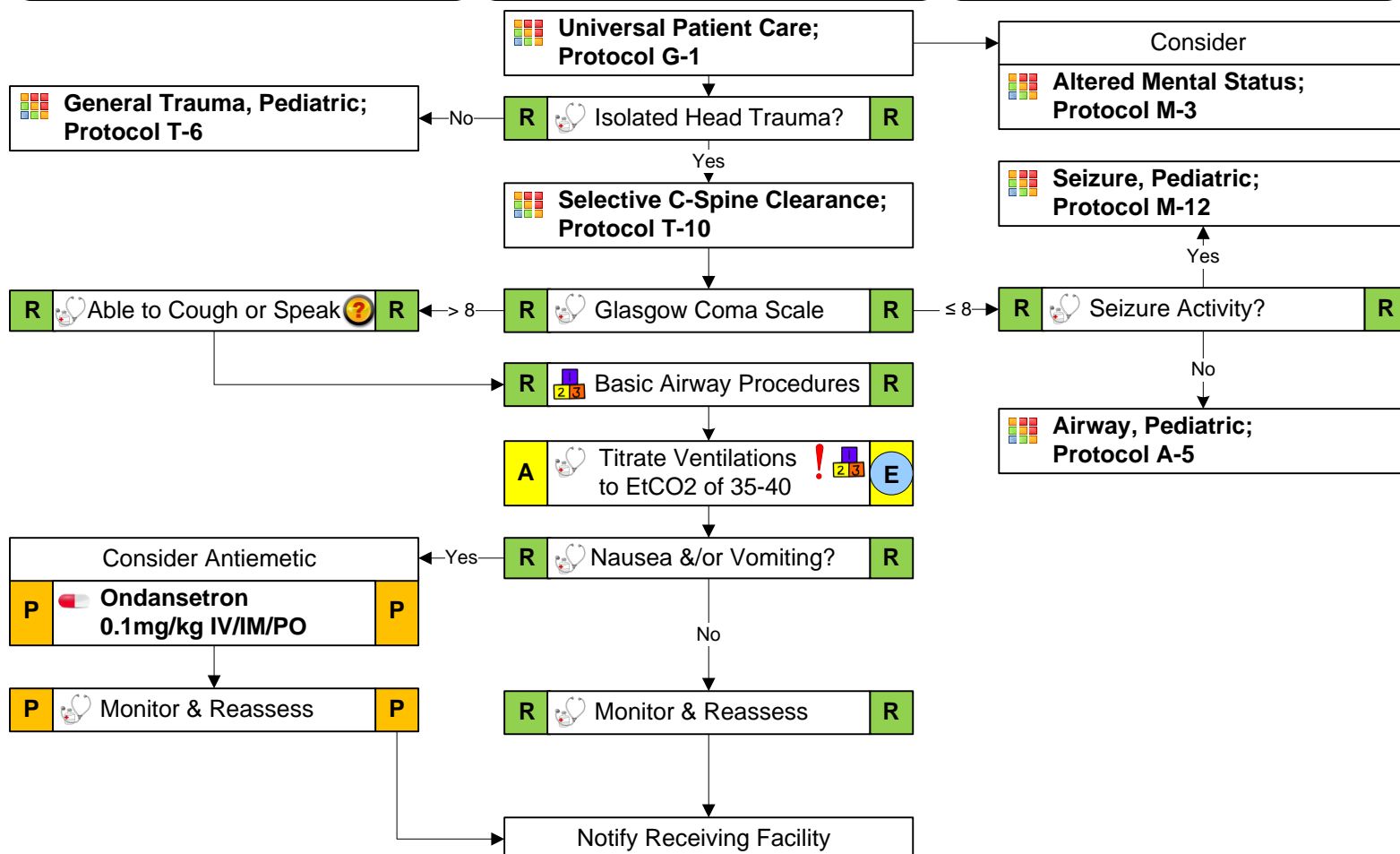
- Time of injury
- Mechanism (blunt v. penetrating)
- Loss of consciousness
- Past medical history
- Medications
- Evidence for multi-systems trauma

## Signs & Symptoms

- Pain, swelling, bleeding
- Altered mental status
- Unconsciousness
- Respiratory distress / failure
- Vomiting
- Seizure activity

## Differential

- Skull fracture
- Brain injury (concussion, contusion, hemorrhage, laceration)
- Epidural / subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Child abuse



## Pearls

- If Glasgow Coma Scale (GSC) is < 12, consider air or rapid transport. If GSC is ≤ 8, intubation should be anticipated.
- Avoid hyperventilation, except in cases of impending herniation (blown pupil, decorticate or decerebrate posturing, bradycardia). For impending herniation, maintain EtCO<sub>2</sub> between 25-30. In the absence of EtCO<sub>2</sub>, hyperventilate at a rate of: 35 breaths per minute (age < 1 year); 30 breaths per minute (age 1-5 years); 25 breaths per minute (age 5-12 years).
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's response).
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively.
- Limit intravenous fluids, unless the patient is hypotensive.
- A change in the patient's level of consciousness is the most important item to monitor and document.
- Concussions are periods of confusion associated with trauma and may resolve by the time EMS arrives. If the patient experiences any loss of consciousness or any prolonged confusion or mental status abnormality that does not return to normal within 15 minutes of injury, they should be evaluated by a physician as soon as possible.
- In areas with short transportation times, intubation is not recommended in patients who are spontaneously breathing and who have oxygen saturations greater than 90% with supplemental oxygen.
- Consider the possibility of child abuse in all pediatric trauma victims.

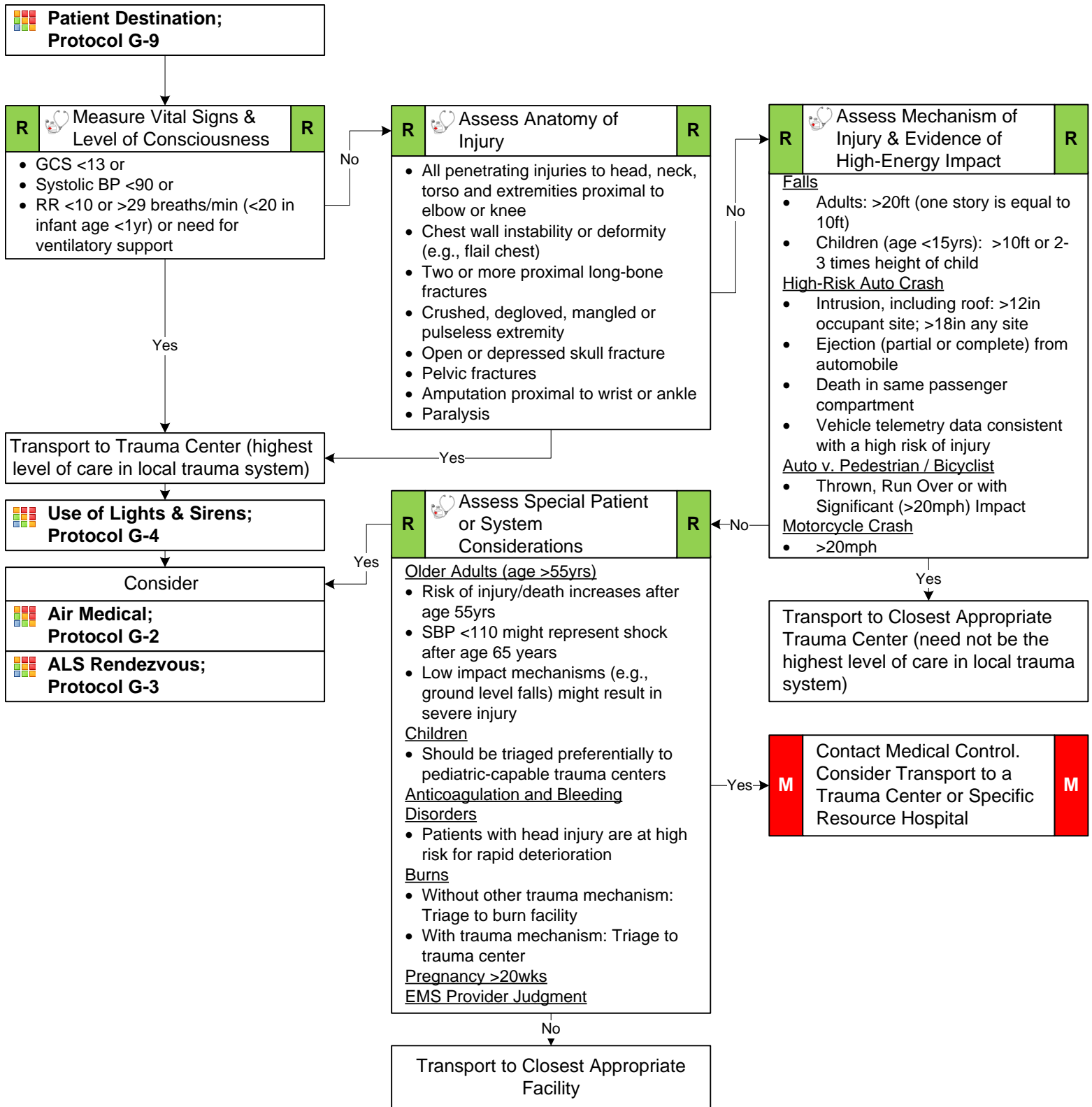
## Performance Improvement Suggestions

- Documentation of frequency of GCS assessment
- Intubation in a short time of transportation

## Protocol T-8 – 2014 Head Trauma, Pediatric

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# Patient Destination: Trauma Triage



## Pearls

- Step 1 (physiologic criteria) and step 2 (anatomic criteria) attempt to identify the most seriously injured patients.
- Depending on the local EMS system, the closest trauma center may or may not be a "Level I" or "Level II" or "Level III" facility.
- When in doubt, transport to a trauma center. Certain patients may benefit from air transport to a more distant trauma center.

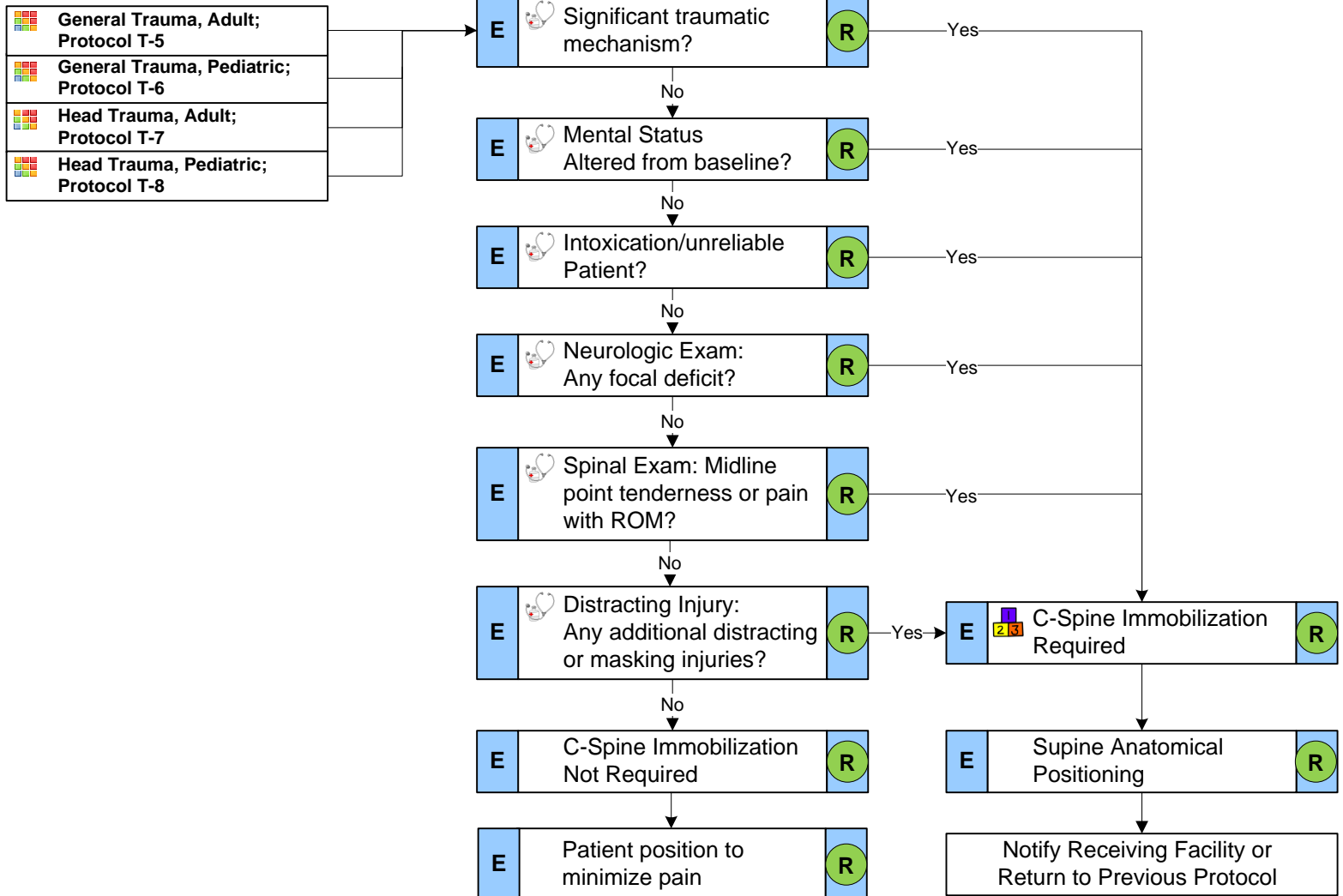
## Performance Improvement Suggestions

- Documentation of criteria used to determine patient destination.
- Documentation of GCS and vital signs.

## Protocol T-9 – 2014 Patient Destination: Trauma Triage

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# Selective C-Spine Immobilization



## Pearls

- A significant mechanism includes high-energy events such as ejection, high falls, and abrupt deceleration crashes. In the setting of a significant mechanism or extremes of age, consider spinal injury, even in the absence of symptoms.
- Range of motion (ROM) should NOT be assessed if the patient has midline spinal tenderness.
- Allowing the appropriate patients to self extricate and position themselves on a stretcher appears to be the most effective way to protect the spine.
- C-Collars should be used with extreme caution with unstable mandible/facial fracture.
- Long spine boards and scoop stretchers are transfer/extrication devices and should be removed as soon as safely possible.
- Cervical collars can be used without the use of full body immobilization..

## Performance Improvement Suggestions

- Documentation of selective criteria

## Protocol T-10 – 2014 Selective C-Spine Immobilization

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# Procedure: Adult Assessment



## **Clinical Indications;**

- Any patient who does not meet the definition of a pediatric patient.

## **Procedure;**

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, bystander safety, and patient/caregiver interaction.
2. Assess need for additional resources.
3. Initial assessment includes a general impression as well as the status of a patient's airway, breathing, and circulation.
4. Assess mental status and disability (e.g., GCS, AVPU).
5. Establish spinal immobilization if suspicion of spinal injury.
6. Perform a focused history and physical based on patient's chief complaint.
7. Assess need for critical interventions.
8. Complete critical interventions and perform a complete secondary exam to include a baseline set of vital signs as directed by protocol.
9. Maintain an on-going assessment throughout transport to include patient response, possible complications of interventions, need for additional interventions, and assessment of evolving patient complaints/conditions.
10. Include Immunizations, Allergies, Medications, Past Medical History, last meal, and events leading up to injury or illness where appropriate.
11. Document all findings and information associated with the assessment, performed procedures, and any administration of medications in the patient care report (PCR).

## **Skills Maintenance Suggestions;**

- Practice full adult assessments on simulated adult patients on a periodic basis.

# Procedure: Pediatric Assessment



## Clinical Indications;

- Any patient <12 years of age or who can be measured with the Broselow-Luten Resuscitation Tape.

## Procedure;

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, bystander safety, and patient/caregiver interaction.
2. Assess need for additional resources.
3. Assess patient using the pediatric triangle of ABCs:
  - Airway and appearance: speech/cry, muscle tone, inter-activeness, look/gaze, movement of extremities
  - Work of breathing: absent or abnormal airway sounds, use of accessory muscles, nasal flaring, body positioning
  - Circulation to skin: pallor, mottling, cyanosis
4. Establish spinal immobilization if suspicion of spinal injury.
5. Establish responsiveness and disability appropriate for age (AVPU, GCS, etc.)
6. Color code using Broselow-Luten tape.
7. Perform a focused history and physical exam based on patient's chief complaint. Recall that pediatric patients easily experience hypothermia and thus should not be left uncovered any longer than necessary to perform an exam.
8. Assess need for critical interventions.
9. Complete critical interventions and perform a complete secondary exam to include a baseline set of vital signs as directed by protocol. If > 3 years of age, record BP. If < 3 years of age, record cap refill.
10. Maintain an on-going assessment throughout transport to include patient response, possible complications of interventions, need for additional interventions, and assessment of evolving patient complaints/conditions.
11. Include Immunizations, Allergies, Medications, Past Medical History, last meal, and events leading up to injury or illness where appropriate.
12. Document all findings and information associated with the assessment, performed procedures, and any administration of medications in the patient care report (PCR).

## Skills Maintenance Suggestions;

- Practice full pediatric assessments on simulated pediatric patients on a periodic basis.



# Procedure: Pain Assessment and Documentation



## Clinical Indications;

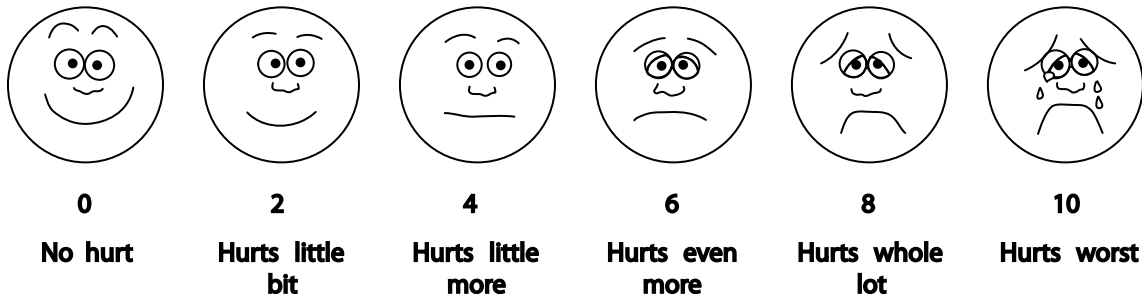
- Any patient with pain

## Definitions;

- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

## Procedure;

- Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self report.
- Pain should be assessed and documented in the PCR during initial assessment, before starting pain control treatment, and after pain control treatment.
- Pain should be assessed using the appropriate approved scale.
- Two commonly used pain scales are the "0 – 10" scale and the Wong - Baker "FACES" scale.
  - 0 – 10 Scale:** the most familiar scale used by EMS for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain at all and 10 is the worst pain ever.
  - Wong – Baker "FACES" scale:** this scale is primarily for use with pediatrics but may also be used with geriatrics or any patient with a language barrier. The faces correspond to numeric values from 0-10. This scale can be documented with the numeric value.



## Skills Maintenance Suggestions;

- Practice pain assessments on a periodic basis.

# Procedure: Pulse Oximetry



## Clinical Indications;

- Patients with suspected hypoxemia.

## Procedure;

1. Apply probe to patient as recommended by the device manufacturer. Pediatric patients may require pediatric specific sensors.
2. Allow machine to register saturation level. Monitor patient for a few minutes as oxygen saturation can vary.
3. Verify pulse rate on monitor with actual pulse of the patient.
4. Record time and initial saturation percent on room air if possible in the patient care report (PCR).
5. Monitor critical patients continuously until arrival at the hospital.
6. Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.
7. Treat the patient, not the data provided by the device. Use the pulse oximetry as an added tool for patient evaluation.
8. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress.
9. Factors which may reduce the reliability of the pulse oximetry reading include:
  - Poor peripheral circulation (shock, hypothermia, cool extremities)
  - Excessive pulse oximeter sensor motion
  - Fingernail polish (may be removed with acetone pad)
  - Carbon monoxide bound to hemoglobin
  - Inflation of BP cuff on same extremity as pulse ox probe.

## Skill Maintenance Suggestions:

- Practice placing pulse oximeter on all size patients on a periodic basis.

# Procedure: Stroke Scale: Cincinnati Stroke Screen



## Clinical Indications;

- Suspected Stroke Patient

## Procedure;

1. Assess and treat suspected stroke patients as per protocol.
2. The Cincinnati Prehospital Stroke Scale interpretation. If any one of these three signs is abnormal, the probability of a stroke is 72%.
  - **Facial Droop** (have patient show teeth or smile)
    - Normal – both sides of the face move equally
    - Abnormal- one side of the face does not move as well as the other side
  - **Arm Drift** (patient closes eyes and holds both arms straight out for 10 seconds)
    - Normal both arms move the same or both arms do not move at all
    - (other findings such as pronator drift may be helpful)
    - Abnormal – one arm does not move or one arm drifts down compared with the other.
  - **Abnormal Speech** (Have the patient say “you cant teach an old dog new tricks”)
    - Normal Patient uses correct words with no slurring
    - Abnormal- patient slurs words, uses the wrong words, or is unable to speak
3. If any one of the three signs is abnormal, the stroke scale is positive.
4. The results of the Cincinnati Prehospital Stroke Scale should be documented in the PCR.

## Skills Maintenance Suggestions;

- Practice performing the Cincinnati Stroke Scale on a periodic basis

# Procedure: Blood Glucose Analysis



## **Clinical Indications;**

- Patients with suspected hypoglycemia (Known Diabetic, Abnormal mental status, Sweating with rapid heart rate, Seizures, Focal neurological deficit, Behavioral changes.)

## **Procedure;**

1. Prepare the device according to the manufacturer's instructions
2. Explain the procedure to the patient
3. Obtain verbal consent, if possible, from patient or family
4. Use body substance isolation procedures
5. Cleanse the puncture site prior to obtaining blood sample
6. Obtain a drop of blood
7. Apply the blood to the test strip according to the manufacturer's instructions
8. Obtain and record the reading from the device
9. Apply a dressing to the patient's puncture site
10. Properly dispose of test supplies
11. Continue your assessment and treatment of the patient

## **Skills Maintenance Suggestions;**

- Calibrate a glucometer and perform a Blood Glucose Analysis on a periodic basis

# Procedure: 12 Lead EKG

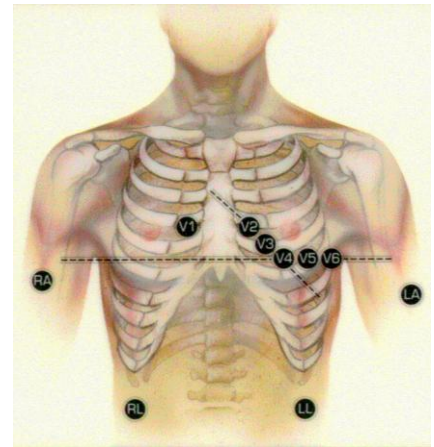


## Clinical Indications:

- Suspected cardiac patient; Cardiac Chest Pain; STEMI
- Syncope
- Dysrhythmia

## Procedure: Procedure may vary by manufacturer of Monitor

1. Assess patient and monitor cardiac status.
2. Administer oxygen as patient condition warrants.
3. If patient is unstable, 12 lead acquisition should not delay definitive treatment with sufficient resources present, treatment and 12 lead may be performed simultaneously.
4. Prepare ECG monitor and connect patient cable with electrodes.
5. Enter the required patient information (patient name, etc.) into the 12 lead ECG device.
6. Expose chest and prep as necessary. Modesty of the patient should be respected.
7. Apply chest leads and extremity leads using the following landmarks:
  - RA -Right arm
  - LA -Left arm
  - RL -Right leg
  - LL -Left leg
  - V1 -4<sup>th</sup> intercostal space at right sternal border
  - V2 -4<sup>th</sup> intercostal space at left sternal border
  - V3 -Directly between V2 and V4
  - V4 -5<sup>th</sup> intercostal space at midclavicular line
  - V5 -Level with V4 at left anterior axillary line
  - V6 -Level with V5 at left midaxillary line
8. Instruct patient to remain still.
9. Press the appropriate button to acquire the 12 Lead ECG.
10. If the monitor detects signal noise (such as patient motion or a disconnected electrode), the acquisition may be interrupted until the noise is removed.
11. Once acquired, transmit the 12 lead ECG to the appropriate hospital or print and deliver with patient. Contact the receiving hospital to notify them that a 12 Lead ECG has been sent.
12. Monitor the patient while continuing with the treatment protocol. Repeat 12 lead ECG after change in patient condition.
13. Document the procedure, time, and results in the patient care report (PCR). Attach a copy of the 12 Lead ECG to the PCR.



## Skills Maintenance Suggestions;

- Acquire and transmit a 12 lead ECG according to local procedure on a periodic basis.

# Procedure: Foreign Body Obstruction



## Clinical Indications;

- Sudden onset of respiratory distress often with coughing wheezing, gagging, or stridor due to a foreign-body obstruction of the upper airway.
- Conscious and unable to speak with extreme anxiety.
- Unconscious and unable to ventilate.

## Procedure;

1. Assess the degree of foreign body obstruction:
  - Do not interfere with a mild obstruction allowing the patient to clear their airway by coughing.
  - In severe foreign-body obstructions, the patient may not be able to make a sound. The victim may clutch his/her neck in the universal choking sign.
2. **For an infant**, deliver 5 back blows (slaps) followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive.
3. **For a child**, perform a subdiaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. **For adults**, a combination of maneuvers may be required.
  - First, subdiaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved.
  - If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in patients who are in the late stages of pregnancy.
5. If the victim becomes unresponsive, begin CPR immediately but look in the mouth before administering each ventilation cycle. If a foreign-body is visible, remove it.
6. In unresponsive patients, Paramedic level professionals should visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magill forceps.

## Skills Maintenance Suggestions;

- On a periodic basis perform digital foreign body removal and Magill-assisted (Paramedic) foreign body removal on adult, child, and infant intubation mannequins.
- On a periodic basis demonstrate the Heimlich Maneuver, chest thrusts, and back slaps on adult, child, and infant CPR mannequins.

# Procedure: Nebulized Bronchodilator



## Clinical Indication:

- Patients requiring nebulized medication.


## Procedure:

1. Gather the necessary equipment.
2. Assemble the nebulizer kit.
3. Instill the premixed drug (such as Albuterol or other approved drug) into the reservoir well of the nebulizer.
4. Connect the nebulizer device to oxygen at 4 - 6 liters per minute or adequate flow to produce a steady, visible mist.
5. Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to have a good lip seal around the mouthpiece. Utilize a facemask for blow-by on patients who cannot tolerate a mouthpiece.
6. The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in nebulizing all of the solution.
7. Monitor the patient for medication effects. This may include the patient's assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.
8. Document the treatment, dose, and route in the patient care report (PCR).
9. Use an in-line adapter for nebulizer treatment of ventilated patient.

## Skills Maintenance Suggestion:

- Assemble nebulizer and inline adapter on a periodic basis.

A

 Nebulized  
Bronchodilator

 2 13

E



# Procedure: CPAP



## **Clinical Indications; for Continuous Positive Airway Pressure (CPAP) Use;**

- CPAP is indicated in all patients whom inadequate ventilation is suspected. This could be as a result of pulmonary edema, pneumonia, COPD, asthma, etc.
- May be a bridge in imminent respiratory failure to avoid/delay intubation.

## **Contraindications;**

- Unconscious, unresponsive, inability to protect airway
- Inability to sit up
- Persistent nausea or vomiting
- Respiratory arrest or agonal respirations
- Suspected pneumothorax, penetrating chest trauma

## **Procedure; Be familiar with and follow the manufacturer recommendations for your device.**

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient. Anticipate and control anxiety with verbal coaching. Consider low dose benzodiazepines.
3. Consider placement of a nasopharyngeal airway.
4. Oxygen should be flowing through the device before placement. Place the delivery mask over the mouth and nose.
5. Secure the mask with provided straps starting with the lower straps until minimal air leak occurs.
6. If the Positive End Expiratory Pressure (PEEP) is adjustable on the CPAP device adjust the PEEP beginning at 0 cmH<sub>2</sub>O of pressure and slowly titrate to achieve a positive pressure as follows:
  - **5 – 10 cmH<sub>2</sub>O for CHF**
  - **3 – 5 cm H<sub>2</sub>O for all other conditions**
7. Evaluate the patient response; assess changes in breath sounds, oxygen saturation, and general appearance.
8. If chronic CO<sub>2</sub> retention is suspected, if possible, titrate FIO<sub>2</sub> to achieve a POX of 90-92%.
9. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications.

## **Skills Maintenance Suggestion;**

- Set up and operate CPAP on a patient, possibly yourself

# Procedure: Continuous ETCO<sub>2</sub>



## Clinical Indications:

- Capnography should be used when available with all invasive airway devices including endotracheal intubation, nasotracheal intubation, cricothyrotomy, or Blind Insertion Airway Devices (BIAD).
- Capnography should also be used, when possible, with CPAP.

## Procedure: Assemble, prepare, and operate device according to manufacturer guidelines and instructions.

1. Attach capnography sensor to the BIAD, endotracheal tube, or oxygen delivery device.
2. Note and document CO<sub>2</sub> level and waveform changes. See protocols for specific target values.
3. CO<sub>2</sub> level should be continuously monitored throughout care and transport.
4. Any loss of CO<sub>2</sub> detection or waveform indicates an airway problem and should be investigated and documented.
5. Document the procedure and results in the Patient Care Report (PCR).

## Skills Maintenance Suggestions;

- Review manufacturer guidelines for your agency device.

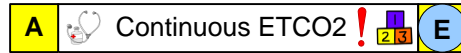
# Procedure: Verification of Tube Placement



## Clinical Indications;

- To assist in determining and documenting the correct placement of an endotracheal tube, Nasotracheal tube, or BIAD.

**It is strongly recommended that continuous Capnography be used in place of, or in addition to, the use of an Esophageal Bulb device. Refer to the Capnography procedure.**



## Esophageal Bulb Procedure;

1. Squeeze the bulb to remove air.
2. Attach the device on the proximal end of the tube or device.
3. Once secured on the tube, release the bulb.
4. If the bulb expands evenly and easily, this indicates probable tracheal intubation.
5. If the bulb does not expand easily, this indicates possible esophageal intubation and the need to reassess the tube placement.
6. Document time and result in the patient care report (PCR).

## Skills Maintenance Suggestion;

- Perform skill on intubation mannequin on a periodic basis.

# Procedure: Injections: Subcutaneous and Intramuscular

## For the administration of Glucagon, Adrenaline and Epi-Pen



### Clinical Indications;

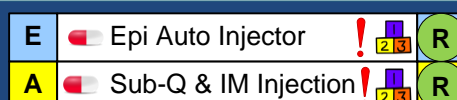
- When medication administration is necessary and the medication is to be given via the SQ or IM route using a syringe or an auto injector.

### Procedure;

- Receive and confirm medication order or perform according to standing orders.
  - For glucagon, mix diluent with powder following manufacturers recommendations using sterile technique.
  - Ensure clarity and color of the medication is appropriate.
  - Check expiration date.
  - Withdraw medication from ampules or vials using sterile technique. An equal volume air may need to be injected into the medication vial to equalize pressure before medication is withdrawn. Use a filter needle to withdraw medication from a glass ampule; dispose after draw.
- Expel air from the syringe and needle before injection.
- Explain the procedure to the patient and reconfirm patient allergies. Confirm the 6 "Rights"  
**Rights:**
  - Right medication**
  - Right route**
  - Right time**
  - Right person**
  - Right dose**
  - Right documentation**
- The most common site for subcutaneous injection is the upper arm. Injection volume should not exceed 1 ml.
- The possible injection sites for intramuscular injections include the deltoid, buttock, and thigh. Injection volume should not exceed 2 ml for the deltoid injection; volume should not exceed 5 ml in the thigh or buttock. (*Brady*)
- The thigh should be used for injections in pediatric patients. Injection volume should not exceed 1 ml.
- Expose the selected area and cleanse the injection site with alcohol.
- Insert the needle into the skin with a smooth, steady motion
  - SQ: 45-degree angle skin pinched Needle size 24-26 gauge 3/8 - 1"
  - IM: 90-degree angle skin flattened 21-23 gauge 5/8-1.5"
  - Epi-Pen, remove cap and push injector firm against the patients lateral thigh at 90-degree angle. Hold in place for 10 seconds after it activates
  - Aspirate for blood, if blood is aspirated, choose new site.
  - Inject the medication slowly, withdraw the needle quickly, and dispose of properly without recapping.
  - Apply pressure to the site.
- Monitor the patient for the desired therapeutic effects as well as any possible side effects.
- Document the medication, dose, route, and time in the patient care report (PCR).

### Skills Maintenance Suggestions;

- Practice complete Epi-Pen, SQ and IM procedure on appropriate simulated sites on a periodic basis.



# Procedure: Safe Haven



As of July 1, 2001, the Idaho Safe Haven Act protects abandoned infants. This law is intended to provide a safe alternative for parents who otherwise might abandon their babies.

A safe haven is authorized by law to accept a baby less than 30 days of age, directly from a parent, without identifying the parent. The parent is not required to provide any information to the safe haven, but may volunteer medical or other information. The parent remains anonymous and will not be prosecuted for child neglect or abandonment.

## **The law specifically identifies the following safe havens;**

- Emergency medical personnel, when responding to a 911 call requesting a safe haven;
- Licensed physicians and staff working at the physician's office or clinic;
- Advanced practice professional nurses, including certified nurse midwives, nurse practitioners, and registered nurse anesthetists;
- Licensed physician assistants;
- Hospitals licensed in Idaho.

## **The safe haven will;**

- Accept the baby from the parent;
- Make certain the baby receives necessary medical attention;
- Immediately contact law enforcement. Law enforcement will establish emergency protective custody of the baby and contact the Idaho Department of Health and Welfare, which will provide an emergency home and prepare and file a Certificate of Live Birth Foundling with the Vital Statistics Unit;
- Not ask the parent's name, but may ask the parent if they wish to provide medical or other information about the baby.

## **More Information;**

- Idaho CareLine, 2-1-1 or 1-800-926-2588;
- Health and Welfare child protection, 208-334-5700;

# Procedure: Intubation, Medication Assisted Paralytic

## Page 1



### Clinical Indications;

- Need for endotracheal intubation in a non-cardiac arrest patient AND one of the following:
  - patient has intact protective airway reflexes
  - is not flaccid

### Relative Contraindication;

- Anticipated difficult airway (consider drug assisted intubation-sedation only, nasal intubation).

### Succinylcholine Contraindications;

- Significant burns between 24 hours old and 2 weeks old.
- Known neuromuscular disease such as myasthenia gravis, amyotrophic lateral sclerosis, muscular dystrophy, Guillain-Barre syndrome.
- Patient or family history of malignant hyperthermia

### Minimum Required Equipment (Per EMS Minimum Equipment Standards);

- Oxygen delivery, Bag Valve Mask, Suction device,
- Endotracheal tubes: ETT size selection should be based on patient age or size of 5<sup>th</sup> finger or nares.
- Laryngoscope blades: Adult and pediatric blades. At least three sizes of two different blade types (e.g., Miller, Macintosh, other).
- Pulse oximeter: Pulse oximetry should be monitored before, during, and after intubation.
- Rescue device: At least one device must be available (e.g., Blind Insertion Airway Device, bougie/flexguide).
- ETT placement confirmation device: Either end-tidal CO<sub>2</sub> detection (qualitative or quantitative) or an esophageal detector device (EDD) must be available.

### Procedure;

1. Prepare, position and oxygenate the patient with 100% Oxygen by BVM. Consider ear-to-sternal notch positioning unless C-spine immobilization is indicated.
2. Select proper ETT (and stylet, if used) and have suction ready.
  - If age <2yrs administer Atropine.
  - Administer sedation and initiate Cricoid pressure
  - Administer paralytic
3. Using laryngoscope, visualize vocal cords. Consider Sellick's maneuver, BURP maneuver or external laryngeal manipulation to improve your view.
4. Limit each intubation attempt to 30 seconds with BVM between attempts.
5. Visualize ETT passing through vocal cords.
6. Inflate the cuff with 3-10 cc of air and confirm and document ETT placement using end-tidal CO<sub>2</sub> detection or an EDD. ETT placement should be confirmed using multiple additional methods such as presence of bilaterally equal breath sounds, absence of sounds over the epigastrium, chest rise, ETT misting, and patient response. If you are unsure of placement, remove ETT and ventilate patient with BVM. Release cricoid pressure after confirmation of ETT placement.
7. Secure the ETT to the patient's face.
8. Consider using a BIAD, bougie/flexguide, or other difficult airway device or rescue airway device if intubation efforts are unsuccessful.



# Procedure: Intubation Drug Assisted Paralytic

## Page 2



### Procedure (continued);

9. EMS personnel may not attempt intubation more than 3 times each. All EMS personnel from the same EMS agency may not collectively attempt intubation more than 5 times. An intubation attempt is defined as passing the laryngoscope blade or endotracheal tube past the teeth or inserted into the nasal passage.

10. Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient's teeth or lips on/with the patient care report (PCR). Document all devices used to confirm initial ETT placement. Also document positive or negative breath sounds before and after each movement of the patient

11. Paramedics should consider NG or OG tube placement to clear stomach contents after the airway is secured with an ETT.

12. If available, continuous end-tidal CO<sub>2</sub> Capnography and Pulse Oximetry are strongly recommended to monitor the airway. Record readings on scene, enroute to the hospital and at the hospital.

### Performance Assessment and Improvement;

- EMS personnel must maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure.
- Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
- Assessment must include an annual (or more frequent) demonstration of intubation proficiency and an annual (or more frequent) review of intubation to include cognitive and psychomotor components with an emphasis on team coordination.
- All intubation attempts must be monitored by the local EMS System. Monitoring must include 100% chart review and tracking of the following EMS agency and EMS personnel parameters:
  - Intubation success rate
  - 1<sup>st</sup> attempt intubation success rate
  - Complications including unrecognized right mainstem intubation, unrecognized esophageal intubation, airway or dental trauma, hypoxia during intubation, bradycardia during intubation, inappropriate ETT size' and inappropriate ETT placement location (ETT depth).
- The local EMS system must also monitor rescue airway device utilization.
- The local EMS Medical Director must oversee remediation of intubation performance.





# Procedure: Needle Chest Decompression

## Clinical Indications;

- Patients with increasing shortness of breath.
- Patients with hypotension (SBP <90), clinical signs of shock, and at least one of the following signs:
  - Jugular vein distention.
  - Tracheal deviation away from the side of the injury (often a late sign).
  - Absent or decreased breath sounds on the affected side.
  - Hyper-resonance to percussion on the affected side.
  - Increased resistance when ventilating a patient.
- Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated. These patients may require bilateral chest decompression even in the absence of the signs above.

## Procedure;

1. Don personal protective equipment (gloves, eye protection, etc.).
2. Administer high flow oxygen.
3. Identify and prep the site:
  - Locate the second to third intercostal space in the mid-clavicular line on the same side as the pneumothorax.
  - If unable to place anteriorly, lateral placement may be used at the *fourth to sixth ICS mid-axillary line, avoiding liver/spleen puncture.*
  - Prepare the site with antiseptic.
4. Insert the catheter (14 gauge 3.25" for adults) into the skin over the rib and direct it just over the top of the rib (superior border) into the pleural space.
5. Advance the catheter through the parietal pleura until a "pop" is felt and air or blood exits under pressure through the catheter, remove needle, then advance catheter.
6. Secure the catheter hub to the chest wall with dressings and tape.
7. Secure a one way valve to catheter hub.

## Skills Maintenance Suggestions;

- Perform a needle decompression on an appropriate mannequin on a periodic basis.